Vol. 1134 Number 3

OFFICIAL GAZETTE

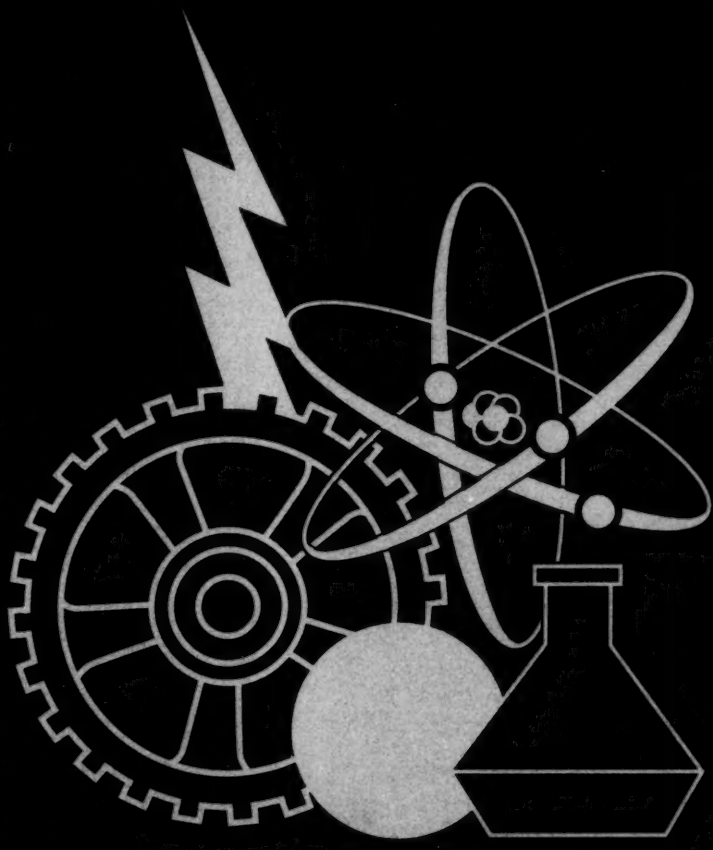
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

ute to:

PATENTS

January 21, 1992



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE

January 21, 1992 Volume 1134 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1126 O.G. 2, on May 7, 1991.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on July 1, 1991, due to a difference in the exchange rate of the U.S. dollar in relation to the German mark, and was announced in the *Official Gazette* at 1126 O. G. 76 on May 28, 1991.

International fees were changed on January 1, 1992, due to a decision of the Assembly of the PCT Union taken during its meeting from 23 September 1991 to 02 October 1991, and were announced in the *Official Gazette* at 1133 O.G. 98, on Dec. 24, 1991.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Dec. 16, 1991 and were announced in the *Official Gazette* at 1133 O.G. 43 on Dec. 17, 1991.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	190.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	600.00
—Corresponding prior U.S. national application filed	400.00
—Supplemental search fee, per additional invention	160.00
European Patent Office as ISA	1320.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA	440.00
—Additional examination fee, per additional invention	140.00
—ISA not the USPTO	650.00
—Additional examination fee, per additional invention	220.00
International fees	
Basic fee	525.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region for the first 10 national or regional offices	127.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	161.00

U.S. National Stage fees	Small Entity	Regular
USPTO was IPEA	310.00	620.00
USPTO was ISA but not IPEA	345.00	690.00
USPTO was neither ISA nor IPEA .	460.00	920.00
Filing with an EPO or JPO search report	400.00	800.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
—For each independent claim in excess of 3	36.00	72.00
—For each claim in excess of 20	10.00	20.00
—For each application containing a multiple dependent claim	110.00	220.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Dec. 18, 1991

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on January 17, 1989 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,797,952 through 4,799,271
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 15, 1985 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,493,115 through 4,494,244
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity.

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months and eleven years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Dec. 16, 1991, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9f) $450.00
By other than a small entity $900.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9f) $905.00
By other than a small entity $1,810.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§1.9(f)) $1,365.00
By other than a small entity.....$2,730.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§1.9f) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable $600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED NOVEMBER 10, 1991 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,413,358	06/246,744	11/08/83
4,413,360	06/315,423	11/08/83
4,413,364	06/347,440	11/08/83
4,413,376	06/424,322	11/08/83
4,413,389	06/225,826	11/08/83
4,413,398	06/304,450	11/08/83
4,413,400	06/448,360	11/08/83
4,413,405	06/316,530	11/08/83
4,413,409	06/271,828	11/08/83
4,413,414	06/379,069	11/08/83
4,413,425	06/330,240	11/08/83
4,413,427	06/288,124	11/08/83
4,413,431	06/387,668	11/08/83
4,413,433	06/327,581	11/08/83
4,413,437	06/273,869	11/08/83
4,413,441	06/319,493	11/08/83
4,413,442	06/330,963	11/08/83
4,413,444	06/283,794	11/08/83
4,413,448	06/419,973	11/08/83
4,413,451	06/374,980	11/08/83
4,413,454	06/270,396	11/08/83
4,413,457	06/231,597	11/08/83
4,413,461	06/284,790	11/08/83
4,413,466	06/338,480	11/08/83
4,413,468	06/364,992	11/08/83
4,413,478	06/340,328	11/08/83
4,413,482	06/270,966	11/08/83
4,413,484	06/284,093	11/08/83
4,413,487	06/401,606	11/08/83
4,413,493	06/222,350	11/08/83
4,413,494	06/234,115	11/08/83
4,413,496	06/311,003	11/08/83
4,413,497	06/304,121	11/08/83
4,413,498	06/347,101	11/08/83
4,413,500	06/417,756	11/08/83
4,413,502	06/352,562	11/08/83
4,413,504	06/382,633	11/08/83
4,413,506	06/240,647	11/08/83
4,413,509	06/313,359	11/08/83
4,413,510	06/323,057	11/08/83
4,413,511	06/357,516	11/08/83
4,413,512	06/336,743	11/08/83
4,413,514	06/266,487	11/08/83
4,413,515	06/293,037	11/08/83
4,413,523	06/371,084	11/08/83
4,413,528	06/254,408	11/08/83
4,413,551	06/317,352	11/08/83
4,413,554	06/373,058	11/08/83
4,413,555	06/274,806	11/08/83
4,413,562	06/360,066	11/08/83
4,413,564	06/259,591	11/08/83
4,413,571	06/278,355	11/08/83
4,413,572	06/472,729	11/08/83
4,413,587	06/302,067	11/08/83
4,413,588	06/389,382	11/08/83
4,413,589	06/373,358	11/08/83
4,413,596	06/411,804	11/08/83
4,413,603	06/332,485	11/08/83
4,413,613	06/284,495	11/08/83
4,413,614	06/310,216	11/08/83
4,413,624	06/271,780	11/08/83
4,413,631	06/334,081	11/08/83
4,413,633	06/269,259	11/08/83
4,413,649	06/363,017	11/08/83
4,413,658	06/295,330	11/08/83
4,413,663	06/325,131	11/08/83
4,413,667	06/356,302	11/08/83
4,413,671	06/374,570	11/08/83
4,413,672	06/365,764	11/08/83
4,413,678	06/229,699	11/08/83
4,413,686	06/483,413	11/08/83
4,413,690	06/357,460	11/08/83
4,413,693	06/248,405	11/08/83
4,413,705	06/326,774	11/08/83
4,413,712	06/233,528	11/08/83
4,413,714	06/279,084	11/08/83
4,413,715	06/321,139	11/08/83
4,413,724	06/264,845	11/08/83
4,413,726	06/340,258	11/08/83
4,413,735	06/256,137	11/08/83
4,413,736	06/363,057	11/08/83
4,413,742	06/335,216	11/08/83
4,413,745	06/261,148	11/08/83
4,413,749	06/270,930	11/08/83
4,413,754	06/354,206	11/08/83
4,413,762	06/313,803	11/08/83
4,413,764	06/301,568	11/08/83
4,413,765	06/237,526	11/08/83
4,413,769	06/415,147	11/08/83
4,413,774	06/354,040	11/08/83
4,413,778	06/378,609	11/08/83
4,413,784	06/308,203	11/08/83
4,413,785	06/302,226	11/08/83
4,413,791	06/369,978	11/08/83

Patent Number	Serial Number	Issue Date
4,413,792	06/287,201	11/08/83
4,413,796	06/292,837	11/08/83
4,413,803	06/270,586	11/08/83
4,413,804	06/283,570	11/08/83
4,413,805	06/274,749	11/08/83
4,413,810	06/408,510	11/08/83
4,413,813	06/342,433	11/08/83
4,413,814	06/252,998	11/08/83
4,413,819	06/252,286	11/08/83
4,413,820	06/317,315	11/08/83
4,413,824	06/312,883	11/08/83
4,413,826	06/398,112	11/08/83
4,413,836	06/288,896	11/08/83
4,413,844	06/238,120	11/08/83
4,413,851	06/267,366	11/08/83
4,413,863	06/288,508	11/08/83
4,413,866	06/386,249	11/08/83
4,413,880	06/222,189	11/08/83
4,413,884	06/301,553	11/08/83
4,413,886	06/228,599	11/08/83
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4,413,910	06/234,361	11/08/83
4,413,916	06/360,836	11/08/83
4,413,920	06/310,158	11/08/83
4,413,924	06/284,750	11/08/83
4,413,926	06/290,537	11/08/83
4,413,929	06/471,136	11/08/83
4,413,933	06/305,393	11/08/83
4,413,935	06/278,242	11/08/83
4,413,940	06/240,278	11/08/83
4,413,948	06/400,582	11/08/83
4,413,953	06/332,369	11/08/83
4,413,956	06/304,648	11/08/83
4,413,962	06/303,309	11/08/83
4,413,967	06/415,358	11/08/83
4,413,968	06/357,224	11/08/83
4,413,970	06/238,884	11/08/83
4,413,978	06/379,051	11/08/83
4,413,982	06/301,351	11/08/83
4,413,988	06/372,457	11/08/83
4,413,991	06/359,222	11/08/83
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4,413,996	06/283,291	11/08/83
4,413,997	06/464,530	11/08/83
4,413,999	06/355,260	11/08/83
4,414,000	06/388,932	11/08/83
4,414,003	06/319,236	11/08/83
4,414,004	06/356,721	11/08/83
4,414,007	06/298,052	11/08/83
4,414,010	06/390,567	11/08/83
4,414,016	06/377,871	11/08/83
4,414,018	06/356,422	11/08/83
4,414,020	06/222,077	11/08/83
4,414,031	06/359,943	11/08/83
4,414,038	06/396,138	11/08/83
4,414,040	06/294,670	11/08/83
4,414,043	06/341,737	11/08/83
4,414,045	06/350,823	11/08/83
4,414,046	06/351,014	11/08/83
4,414,047	06/272,637	11/08/83
4,414,051	06/363,074	11/08/83
4,414,058	06/449,145	11/08/83
4,414,062	06/322,587	11/08/83
4,414,082	06/321,396	11/08/83
4,414,084	06/409,268	11/08/83
4,414,085	06/309,656	11/08/83
4,414,089	06/404,347	11/08/83
4,414,090	06/307,588	11/08/83
4,414,092	06/368,556	11/08/83
4,414,093	06/335,997	11/08/83
4,414,095	06/273,200	11/08/83
4,414,096	06/275,040	11/08/83
4,414,098	06/288,572	11/08/83
4,414,102	06/263,820	11/08/83
4,414,104	06/374,717	11/08/83
4,414,110	06/223,964	11/08/83
4,414,112	06/343,995	11/08/83
4,414,119	06/336,731	11/08/83
4,414,123	06/268,955	11/08/83
4,414,134	06/222,820	11/08/83
4,414,138	06/384,422	11/08/83
4,414,147	06/255,321	11/08/83
4,414,149	06/471,982	11/08/83
4,414,154	06/313,913	11/08/83
4,414,157	06/335,493	11/08/83
4,414,162	06/346,992	11/08/83
4,414,167	06/350,087	11/08/83
4,414,176	06/269,235	11/08/83
4,414,177	06/315,379	11/08/83
4,414,182	06/345,016	11/08/83
4,414,184	06/361,193	11/08/83
4,414,187	06/379,801	11/08/83
4,414,191	06/290,926	11/08/83
4,414,192	06/415,636	11/08/83
4,414,195	06/290,097	11/08/83
4,414,198	06/371,517	11/08/83
4,414,212	06/354,065	11/08/83
4,414,215	06/399,382	11/08/83
4,414,216	06/390,433	11/08/83
4,414,221	06/246,042	11/08/83
4,414,224	06/341,972	11/08/83
4,414,225	06/348,496	11/08/83
4,414,226	06/317,897	11/08/83
4,414,228	06/336,030	11/08/83
4,414,236	06/274,609	11/08/83
4,414,244	06/388,873	11/08/83
4,414,250	06/308,064	11/08/83
4,414,253	06/425,472	11/08/83
4,414,256	06/222,644	11/08/83
4,414,260	06/409,599	11/08/83
4,414,267	06/252,514	11/08/83
4,414,275	06/282,782	11/08/83
4,414,283	06/426,529	11/08/83
4,414,293	06/420,052	11/08/83
4,414,294	06/424,111	11/08/83
4,414,296	06/371,123	11/08/83
4,414,297	06/371,121	11/08/83
4,414,317	06/370,415	11/08/83
4,414,318	06/361,267	11/08/83
4,414,326	06/345,705	11/08/83
4,414,335	06/333,733	11/08/83
4,414,342	06/328,159	11/08/83
4,414,343	06/443,429	11/08/83
4,414,396	06/337,660	11/08/83
4,414,401	06/316,381	11/08/83
4,414,402	06/423,924	11/08/83
4,414,407	06/328,245	11/08/83
4,414,410	06/339,232	11/08/83
4,414,425	06/306,355	11/08/83
4,414,436	06/369,589	11/08/83
4,414,438	06/384,923	11/08/83
4,414,439	06/373,363	11/08/83
4,414,448	06/280,467	11/08/83
4,414,449	06/267,372	11/08/83
4,414,450	06/260,203	11/08/83
4,414,452	06/448,929	11/08/83
4,414,454	06/292,597	11/08/83
4,414,458	06/249,834	11/08/83
4,414,461	06/294,873	11/08/83
4,414,462	06/284,460	11/08/83
4,414,465	06/240,324	11/08/83
4,414,474	06/349,442	11/08/83
4,414,475	06/309,069	11/08/83
4,414,476	06/275,203	11/08/83
4,414,482	06/265,623	11/08/83
4,414,484	06/272,437	11/08/83
4,414,485	06/276,264	11/08/83
4,414,491	06/291,394	11/08/83
4,414,498	06/236,840	11/08/83
4,414,500	06/344,517	11/08/83
4,414,505	06/285,524	11/08/83
4,414,506	06/221,520	11/08/83
4,414,508	06/249,016	11/08/83

Patent Number	Serial Number	Issue Date
4,414,513	06/254,867	11/08/83
4,414,517	06/273,166	11/08/83
4,414,518	06/445,815	11/08/83
4,414,531	06/429,414	11/08/83
4,414,532	06/322,289	11/08/83
4,414,533	06/272,600	11/08/83
4,414,552	06/345,276	11/08/83
4,414,556	06/303,135	11/08/83
4,414,562	06/411,299	11/08/83
4,414,567	06/305,075	11/08/83
4,414,574	06/327,432	11/08/83
4,414,576	06/305,401	11/08/83
4,414,595	06/289,846	11/08/83
4,414,596	06/274,554	11/08/83
4,414,605	06/278,820	11/08/83
4,414,606	06/274,011	11/08/83
4,414,614	06/450,684	11/08/83
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4,704,778	06/855,937	11/10/87
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4,704,784	06/746,316	11/10/87
4,704,793	06/776,516	11/10/87
4,704,795	06/832,541	11/10/87
4,704,802	06/835,365	11/10/87
4,704,807	06/875,634	11/10/87
4,704,810	06/829,169	11/10/87
4,704,812	06/887,896	11/10/87
4,704,816	07/028,220	11/10/87
4,704,817	07/010,179	11/10/87
4,704,818	06/826,335	11/10/87
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4,704,883	06/822,650	11/10/87
4,704,892	06/816,720	11/10/87
4,704,901	06/864,799	11/10/87
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4,704,911	06/860,784	11/10/87
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4,704,987	06/844,578	11/10/87
4,704,989	06/814,622	11/10/87
4,704,991	06/777,841	11/10/87
4,704,998	06/767,729	11/10/87
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4,705,102	06/808,658	11/10/87
4,705,103	06/881,436	11/10/87
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4,705,109	06/834,625	11/10/87
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4,705,136	06/847,424	11/10/87
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4,705,143	07/045,436	11/10/87
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4,705,182	06/900,785	11/10/87
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4,705,188	06/893,006	11/10/87
4,705,191	06/760,127	11/10/87
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4,705,198	06/876,429	11/10/87
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4,705,238	06/883,091	11/10/87
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4,705,267	06/722,283	11/10/87
4,705,268	06/806,339	11/10/87
4,705,271	06/544,681	11/10/87
4,705,276	06/846,035	11/10/87
4,705,277	06/669,668	11/10/87
4,705,282	06/919,836	11/10/87
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4,705,296	06/831,523	11/10/87
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4,705,307	06/652,973	11/10/87
4,705,312	06/922,512	11/10/87
4,705,313	06/879,949	11/10/87
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4,705,317	06/867,636	11/10/87
4,705,321	06/872,651	11/10/87
4,705,326	06/898,094	11/10/87
4,705,331	06/690,760	11/10/87
4,705,333	06/767,809	11/10/87
4,705,335	06/824,447	11/10/87
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4,705,400	06/806,893	11/10/87
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4,705,476	06/702,816	11/10/87
4,705,478	06/714,968	11/10/87
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4,705,495	06/850,722	11/10/87
4,705,496	07/006,890	11/10/87
4,705,504	06/945,688	11/10/87
4,705,520	06/847,919	11/10/87
4,705,557	06/829,541	11/10/87
4,705,574	06/697,951	11/10/87
4,705,575	06/711,075	11/10/87
4,705,577	06/878,517	11/10/87
4,705,580	06/863,253	11/10/87
4,705,582	06/925,960	11/10/87
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4,705,616	06/906,847	11/10/87
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4,705,666	06/666,408	11/10/87
4,705,670	06/772,137	11/10/87
4,705,698	06/923,350	11/10/87
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4,705,910	06/777,374	11/10/87
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4,705,927	06/896,438	11/10/87
4,705,929	06/942,994	11/10/87
4,705,930	06/890,927	11/10/87
4,705,936	06/692,389	11/10/87
4,705,938	06/621,808	11/10/87
4,705,946	06/772,786	11/10/87
4,705,951	06/853,274	11/10/87
4,705,954	06/766,448	11/10/87
4,705,955	06/719,226	11/10/87
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4,706,103	06/745,551	11/10/87
4,706,110	06/927,735	11/10/87
4,706,162	07/002,221	11/10/87
4,706,164	06/838,485	11/10/87
4,706,167	06/809,767	11/10/87
4,706,189	06/750,730	11/10/87
4,706,237	06/779,769	11/10/87
4,706,263	06/549,701	11/10/87
4,706,264	06/506,603	11/10/87
4,706,274	06/609,557	11/10/87
4,706,290	06/772,457	11/10/87
4,706,299	06/610,592	11/10/87

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,363,325	06/226,304	12/14/82	1/19/81	6/17/91
4,632,388	06/691,010	12/30/86	1/14/85	7/05/91
4,652,795	06/712,019	3/24/87	3/14/85	9/13/91
4,653,251	06/830,164	3/31/87	4/08/86	10/21/91
4,653,483	06/681,857	3/31/87	7/05/84	5/28/91
4,666,565	06/884,882	5/19/87	7/10/86	7/10/91
4,670,070	06/669,226	6/02/87	12/26/84	7/17/91

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,064,376, Re. S.N. 07/801,597, Filed Dec. 5, 1991, Cl. 381, SOUND REPRODUCTION SYSTEM AND DEVICE, Kyoto Yamada, Owner of Record: *Inventor*, Attorney or Agent: James C. Wray, Ex. Gp.: 233

4,365,462, Re. S.N. 07/802,217, Filed Dec. 4, 1991, Cl. 56/255, MOWER HAVING SEPARATELY REPLACEABLE BEARING SUBASSEMBLY, Anton Werner, et. al., Owner of Record: *Kuhn S.A., Saverne, France*, Attorney or Agent: Richard D. Kelly, Ex. Gp.: 356

4,881,418, Re. S.N. 07/804,440, Filed Dec. 10, 1991, Cl. 74/89.14, PIVOTABLE SCREW JACK DRIVE, Gary G. L. Fimeri, Owner of Record: *Rainsfords Metal Products PTY. Ltd., South Australia, Australia*, Attorney or Agent: David A. Jackson, Ex. Gp.: 352

4,885,076, Re. S.N. 07/803,145, Filed Dec. 4, 1991, Cl. 204/299R, COMBINED ELECTROPHORESIS ELECTROSPRAY INTERFACE AND METHOD, Richard D. Smith, et. al., Owner of Record: *Battelle Memorial Institute, Richland, Washington*, Attorney or Agent: Alexander C. Johnson, Jr., Ex. Gp.: 112

4,885,105, Re. S.N. 07/803,297, Filed Dec. 4, 1991, Cl. 252/90, FILMS FROM PVA MODIFIED WITH NONHYDROLZABLE ANIONIC COMONOMERS, Chi Hae Nmi Yang, et. al., Owner of Record: *The Clorox Co., Oakland, Calif.*, Attorney or Agent: Michael J. Mazza, Ex. Gp.: 115

4,885,576, Re. S.N. 07/801,993, Filed Dec. 3, 1991, Cl. 340/793, SOFT COPY DISPLAY OF FACSIMILE IMAGES, William B. Pennebaker, et. al., Owner of Record: *International Business Machines Corp., Armonk, N.Y.*, Attorney or Agent: Roy R. Schlemmer, Jr., Ex. Gp.: 269

4,886,621, Re. S.N. 07/803,319, Filed Dec. 5, 1991, Cl. 252/299.61, LIQUID CRYSTAL PHASE, Ian Charles Sage, et. al., Owner of Record: *Merck Patent Gesellschaft Mit Beschrankter Haftung Darmstadt, Federal Republic of Germany*, Attorney or Agent: Brian P. Heaney, Ex. Gp.: 223

4,892,237, Re. S.N. 07/801,264, Filed Dec. 3, 1991, Cl. 223/85, INTIMATE APPAREL HANGER WITH GARMENT CLAMPING ARMS, Everett L. Duester, et. al., Owner of Record: *Batts, Inc. Zeeland, Michigan*, Attorney or Agent: Thomas M. McKinley, Ex. Gp.: 247

4,892,414, Re. S.N. 07/804,979, Filed Dec. 11, 1991, Cl. 383/63, BAGS WITH RECLOSEABLE PLASTIC FASTENER HAVING AUTOMATIC SEALING GASKET MEANS, Steven Ausnit, Owner of Record: *Minigrip, Inc., Orangeburg, N.Y.*, Attorney or Agent: William C. Stueber, Ex. Gp.: 241

4,920,480, Re. S.N. 07/803,457, Filed Dec. 6, 1991, Cl. 395/200, DIGITAL SIGNAL PROCESSOR, Tokumichi Murakami, et. al., Owner of Record: *Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Vincent M. DeLuca, Ex. Gp.: 237

4,930,656, Re. S.N. 07/803,542, Filed Dec. 9, 1991, Cl. 220/276, CONTAINER LID WITH A TEAR SKIRT, Henry J. Blanchette, Owner of Record: *Plastican, Inc., Leominster, Maine*, Attorney or Agent: Milton E. Gilbert, Ex. Gp.: 241

4,949.453, Re. S.N. 07/804,958, Filed Dec. 11, 1991, Cl. 29/620, METHOD OF MAKING A CHIP CARRIER WITH TERMINATING RESISTIVE ELEMENTS, Eugene F. Neumann, Owner of Record: *Cray Research, Inc., Minneapolis, Minn.*, Attorney or Agent: Daniel J. Kluth, Ex. Gp.: 326

5,034,427, Re. S.N. 07/803,959, Filed Dec. 9, 1991, Cl. 521/163, METHOD OF PREPARING MOULDED POLYUREA-POLYURETHANE FLEXIBLE FORMS, Roberto Frigo, et. al., Owner of Record: *Imperial Chemical Industries, PLC, Millbank, London*, Attorney or Agent: Paul N. Kokulis, Ex. Gp.: 153

5,049,026, Re. S.N. 07/791,078, Filed Nov. 12, 1991, Cl. 414/408, REFUSE COLLECTION AND LOADING SYSTEM, John Bingman, et. al., Owner of Record: *Sunbelt Automated Systems, Inc., Phoenix, Arizona*, Attorney or Agent: Gregory J. Nelson, Ex. Gp.: 317

5,053,430, Re. S.N. 07/804,563, Filed Dec. 10, 1991, Cl. 514/630, USE OF 2,7—DIAMINO-1,2,3,4-TETRAHYDRONAPHTHALENES AS MEDICAMENTS, NEW 2,7-DIAMINO-1,2,3,4-TETRAHYDRONAPTHALENES AND PROCESS FOR THEIR PREPARATION, Matthias Gravert, et. al., Owner of Record: *Boehringer Ingelhein KG, Ingelheim Am Rhein, Federal Republic of Germany*, Attorney or Agent: Daniel Reitenbach, Ex. Gp.: 125

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,471,385, Reexam No. 90/002,541, Requested Dec. 13, 1991, Cl. 358/230, ELECTRO-OPTICAL ILLUMINATION CONTROL SYSTEM, Gilbert P. Hyatt, Owner of Record: *Inventor, Cerritos, Calif.*, Attorney or Agent: None, Ex. Gp.: 262, Requester: Hoffman, Wasson & Fallow, Attention: Martin P. Hoffman, Arlington, Va.

4,889,744, Reexam No. 90/002,542, Requested Dec. 13, 1991, Cl. 427/002, METHOD FOR MAKING OPEN-CALL SILICONE-ELASTOMER MEDICAL IMPLANT, Joel Quaid, Owner of Record: *Medical Product Developments, Inc., Santa Barbara, Calif.*, Attorney or Agent: Michael G. Petit, Santa Barbara, Calif., Ex. Gp.: 139, Requester: Owner

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Errata

All reference to Patent No. 5,073,535 to Shunpei Yamazaki of Japan for METHOD OF SHAPING SUPERCONDUCTING OXIDE MATERIAL appearing in the *Official Gazette* of Dec. 17, 1991 should be deleted since no patent was granted.

All reference to Patent No. 5,073,894 to Klaus Wunstel, et. al. of Germany for SEMICONDUCTOR LASER appearing in the *Official Gazette* of Dec. 17, 1991 should be deleted since no patent was granted.

PATENT NOTICES

Certificates of Correction For Week of January 21, 1992

Re. 33,195	4,885,173	4,929,463	4,950,050
4,259,315	4,885,529	4,930,187	4,950,270
4,659,512	4,886,834	4,930,463	4,951,020
4,672,574	4,886,935	4,930,521	4,951,345
4,673,562	4,887,600	4,931,413	4,952,497
4,703,999	4,888,093	4,931,510	4,952,868
4,723,824	4,888,900	4,931,717	4,954,494
4,797,157	4,890,864	4,932,133	4,954,657
4,805,711	4,893,567	4,932,197	4,955,166
4,808,798	4,893,710	4,932,512	4,956,368
4,815,327	4,893,842	4,936,267	4,956,400
4,816,527	4,894,576	4,936,544	4,957,335
4,824,202	4,897,523	4,937,287	4,957,494
4,834,904	4,897,962	4,937,353	4,957,577
4,835,090	4,899,291	4,939,890	4,957,614
4,835,729	4,901,842	4,940,832	4,957,836
4,839,430	4,902,546	4,941,242	4,958,341
4,841,327	4,905,332	4,942,796	4,958,415
4,842,091	4,906,374	4,943,522	4,958,708
4,847,055	4,906,621	4,944,439	4,959,004
4,848,440	4,909,064	4,944,830	4,959,092
4,849,594	4,910,725	4,945,084	4,959,294
4,850,686	4,911,852	4,947,327	4,960,397
4,853,991	4,912,311	4,947,398	4,960,502
4,855,238	4,914,171	4,947,902	4,960,590
4,867,701	4,914,670	4,948,003	4,961,150
4,871,703	4,915,193	4,948,301	4,962,967
4,871,711	4,917,846	4,948,438	4,963,220
4,875,984	4,918,284	4,948,455	4,963,350
4,876,178	4,919,067	4,948,476	4,965,079
4,876,199	4,919,379	4,948,542	4,967,010
4,880,660	4,919,539	4,948,550	4,999,001
4,880,808	4,920,079	4,948,603	5,002,260
4,880,926	4,926,803	4,948,786	5,039,147
4,881,084	4,926,878	4,949,074	5,042,949
4,881,116	4,927,806	4,949,083	5,061,192

Disclaimer

5,013,792—*George R. Chapman, Jr.*, Media, Pa.; *Donnan E. Priester*, Wilmington; *Charles W. Stewart*, Newark, both of Del. PROCESSING AID FOR POLYMERS. Patent dated May, 7, 1991. Disclaimer filed June 10, 1991, by the assignee, E. I. Du Pont de Nemours and Co.

Hereby enters this disclaimer to claims 39, 40 and 41 of said patent.

5,061,947—*Donald A. Morrison*, Dayton; *Richard D. Wirrig*, Huber Heights, both of Ohio. MICROPROCESSOR CONTROLLED THERMAL PRINTER. Patent dated Oct. 29, 1991. Disclaimer filed Nov. 19, 1991, by the assignee, Monarch Marketing Systems, Inc.

Hereby enters this disclaimer to claims 1, 2, 3, 4, 10, 11 and 12 of said patent.

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PATENT EXAMINING CORPS

JAMES E. DENNY, Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110 — D. E. TALBERT, Director	308-0661	10/13/90
ORGANIC CHEMISTRY, GROUP 120 — JOHN F. TERAPANE, JR., Director	308-1235	4/26/90
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130 — BARRY S. RICHMAN, Director	308-0651	2/1/91
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150 — J. O. THOMAS, Director	308-2351	7/6/90
BIOTECHNOLOGY, GROUP 180 — EDWARD E. KUBASIEWICZ, Director	308-0196	6/16/90
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DESIGN, GROUP 290 — ROBERT E. GARRETT, Director	308-0511	4/4/89
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MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330 — J. J. LOVE, Director	308-0858	11/12/90
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340 — JOHN KITTLE, Director	308-0861	1/22/90
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 350 — A. L. SMITH, Director	308-0651	11/14/90

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during December 1991 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 3,851,336 to 3,858,240 inclusive
Plant Patents ..... 3,660 to 3,673

REEXAMINATIONS

JANUARY 21, 1992

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,999,118 (1625th)

SPECTROGRAPHIC ANALYSIS OF MATERIALS

David I. Hoult, Wilmslow, England, assignor to National Research Development Corp., London, England

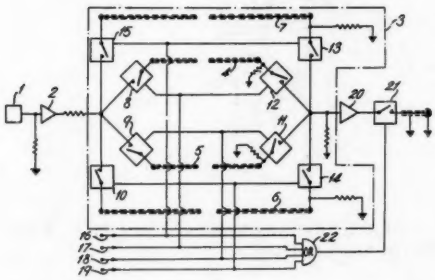
Reexamination Request No. 90/002,165, Oct. 12, 1990.

Reexamination Certificate for Patent No. 3,999,118, issued Dec. 21, 1976, Ser. No. 553,725, Feb. 27, 1975.

Claims priority, application United Kingdom, Apr. 8, 1974, 15530/74

Int. Cl.[5] G01R *33/20, 33/08*

U.S. Cl. 324—314



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–4** is confirmed.

1. Nuclear magnetic resonance apparatus comprising:

pulse modulated radio-frequency transmitter means for exciting a specimen by means of a train of radio-frequency pulses, successive ones of which are in relative phase quadrature;

receiver means for producing two audio frequency signals in response to the detection of transient radio-frequency resonance signals from the specimen so excited, said receiver means comprising:

similar first and second detector means each having first and second inputs and each producing, in response to the application of first and second sinusoidal signals respectively to its first and second inputs, an output signal having a frequency and phase angle whose values are respectively equal to the differences between the frequencies and phase angles of said first and second sinusoidal signals,

means for applying to the respective first inputs of said first and second detector means two substantially identical sinusoidal signals derived from and having the same transient form as said resonance signals, and

means for applying to the respective second inputs of said first and second detector means first and second sinusoidal reference signals which are substantially identical except for being in phase quadrature and which have a frequency close to that of said two substantially identical signals.

B1 4,336,554 (1628th)

CODE SIGNAL BLANKING APPARATUS

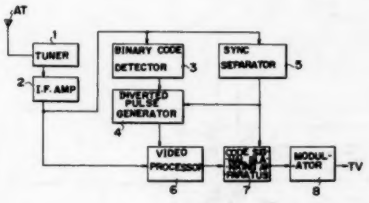
Masataka Okada, and Toshimi Shiun, both of Toda, Japan, assignors to Macrovision Corp., Cupertino, Calif.

Reexamination Request No. 90/001,976, Mar. 28, 1990.

Reexamination Certificate for Patent No. 4,336,554, issued Jun. 22, 1982, Ser. No. 161,696, Jun. 23, 1980.

Int. Cl.[5] H04N *7/167, 5/08*

U.S. Cl. 380—20



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 5** and **9** are cancelled.

Claims **2–4** and **6–8** are determined to be patentable as amended.

New claims **10–12** and **13** are added and determined to be patentable.

13. A code signal blanking apparatus as claimed in claim 1, wherein said pulse generating means includes a one-shot multivibrator, said one-shot multivibrator being triggered by a vertical synchronizing signal.

B1 4,571,850 (1626th)

CENTRIFUGAL WAFER PROCESSOR

James R. Hunt, Westminster, and Russell P. Balent, Fountain Valley, both of Calif., assignors to Verteq, Inc., Anaheim, Calif.

Reexamination Request No. 90/002,139, Sep. 14, 1990.

Reexamination Certificate for Patent No. 4,571,850, issued Feb. 25, 1986, Ser. No. 611,522, May 17, 1984.

Int. Cl.[5] F26B *25/00, 11/02*

U.S. Cl. 34—242

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **13–16** and **18–20** is confirmed.

Claims **1, 7, 11, 12** and **17** are determined to be patentable as amended.

Claims **2–6** and **8–10**, dependent on an amended claim are determined to be patentable.

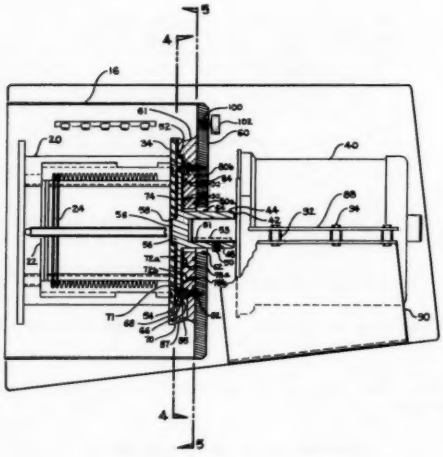
New claims **21** and **22** are added and determined to be patentable.

1. An apparatus for processing carriers of semi-conductor wafers and glass photomask plates, comprising:

a rotatable frame configured to releasably hold a carrier;

a motor connected to the rotatable frame in a direct drive manner to rotate the frame;

a container enclosing the rotatable frame, the container having an aperture through which the rotatable frame is connected with the drive motor, the container not contacting the rotatable frame or the drive motor;



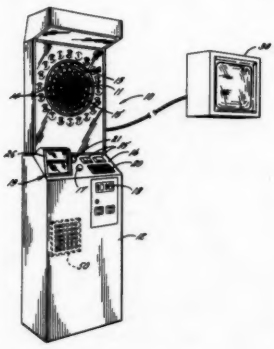
means for providing a positive pressure gas seal between *the rotating and non-rotating parts of* the container and the connection between the rotatable frame and the drive motor, the gas seal providing a positive pressure which prevents contaminants from passing through the seal into the inside of the container, *there being no contact seal between said parts,* the gas seal further providing a positive pressure to the inside of the container.

B1 4,824,121 (1627th)

DART GAME WITH PROGRAMMABLE DISPLAYS

Paul F. Beall, and Eugene G. Harlan, both of Rockford, Ill., assignors to Arachnid, Inc.

Reexamination Request No. 90/002,269, Feb. 4, 1991.
Reexamination Certificate for Patent No. 4,824,121, issued Apr. 25, 1989, Ser. No. 114,194, Oct. 28, 1987.
Continuation-in-part of Ser. No. 88,723, Aug. 24, 1987, Pat. No. 4,793,618, which is a continuation-in-part of Ser. No. 926,916, Nov. 3, 1986, abandoned
Int. Cl.[5] F41J *3/00, 3/02*
U.S. Cl. 273—376



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–4, 6, 7** and **10** is confirmed.

Claims **5, 8** and **9** are cancelled.

1. An electronic target game for automatically tallying and displaying the score of a game, wherein projectiles are thrown at a target board, said electronic target game comprising:

a display;

said target board comprising a plurality of moveable segments mounted to a switch matrix such that each segment is associated with at least one switch of said switch matrix such that movement of a segment activates at least one switch;

a processor means responsive to the activation of the switches of said switch matrix in both a first mode and a second mode; and

a means for placing said processor means in either said first mode or said second mode;

said first mode responsive to activation of the switches of said switch matrix for providing game condition information to said display; and

said second mode responsive to activation of the switches of said switch matrix for providing a customized image to said display when said electronic target game is not tallying and displaying said score of said game.

REISSUES

JANUARY 21, 1992

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

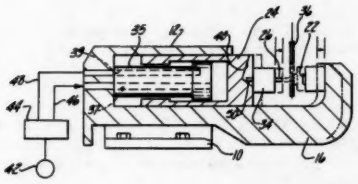
Re. 33,798
SELF-EQUALIZING PIERCING MACHINE

Edward J. Waltonen, Southfield, Mich., assignor to REO Hydraulic Pierce & Form Inc., Detroit, Mich.

Original No. 4,716,803, dated Jan. 5, 1988, Ser. No. 427,048, Sep. 29, 1982. Application for reissue Sep. 6, 1990, Ser. No. 579,980

Int. Cl.[5] B26D *5/12, 7/26*

U.S. Cl. 83—529 **6 Claims**



1. Apparatus for performing an operation such as piercing of a workpiece in an equalized forced mode so a to prevent distortion thereof comprising:

a base;

a yoke having a proximal portion mounted on the base for bidirectional movement along a work axis, and a distal portion for supporting one side of the workpiece during said operation;

integral piston and ram means slideably mounted within the proximal portion of the yoke for bidirectional movement relative to the yoke along the work axis to provide force on the other side of the workpiece during said operation;

means for supplying hydraulic fluid pressure to said integral piston and ram means to cause complemental movement of the piston means and yoke during work and return strokes;

said integral piston and ram means comprising a hollow cylindrical piston body defining first and second axially opposite fluid pressure reaction surfaces and having an exposed end which is proximate the distal end of the yoke and which defines with said distal end a work gap; and

said apparatus further including an internal core mechanically fixed to the yoke, said piston body being arranged on the internal core for sliding movement thereover, said reaction surfaces and said core responding to fluid pressure to produce axial movement of said integral piston and ram means relative to said yoke when supplied with fluid pressure.

Re. 33,799
CYLINDER RUPTURE VESSEL

Jeffrey W. Gold, 1081 Los Angeles Ave., Atlanta, Ga. 30306, and Dan A. Nickens, 4712 Old Winter Garden Rd., Orlando, Fla. 32811

Original No. 4,690,180, dated Sep. 1, 1987, Ser. No. 669,537, Nov. 8, 1984. Application for reissue Apr. 2, 1990, Ser. No. 502,808

Int. Cl.[5] B67B *7/24*

U.S. Cl. 141—51 **21 Claims**

1. A waste cylinder rupture vessel, comprising:

an enclosed chamber with a longitudinal axis;

means for gaining access to the interior of said chamber;

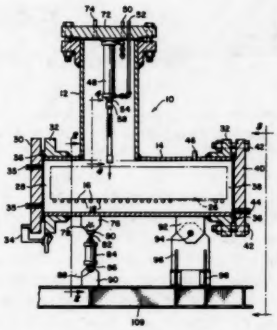
bearing means located within said chamber adapted to support thereon a target container to be ruptured;

means for sealing said chamber;

means for communicating with the interior of said chamber to purge the air from said chamber;

means for communicating with the interior of said chamber to introduce an inert gas into said chamber; and

puncture means including moveable parts which are disposed entirely within said chamber for puncturing at least



one wall of said target container, said puncture means being positioned along said longitudinal axis of the chamber at the mid section of the chamber, said puncture means being adapted to puncture the mid-section of said target container whereby the contents of said target container are released, said contents being contained within said enclosed chamber.

Re. 33,800
METHOD FOR ELECTROPLATING NICKEL ONTO TITANIUM ALLOYS

Donald E. Fornwalt, East Corinth, Vt.; Gary M. Lomasney, New Britain, and Kostas Routsis, East Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Original No. 4,902,388, dated Feb. 20, 1990, Ser. No. 375,231, Jul. 3, 1989. Application for reissue Dec. 27, 1990, Ser. No. 634,854

Int. Cl.[5] C25D *5/38*

U.S. Cl. 205—212 **4 Claims**

3. A method for applying a layer of nickel onto a titanium base alloy component containing at least 1 weight % of a refractory metal element, comprising the steps of:

(a) etching the surface of the component in a room temperature solution consisting essentially of, by volume, about 94–96% of 36–38% HCl and about 4–6% of 70% HF for at least about 10 seconds;

(b) anodically etching the component surface at about [1.4] *161* amperes per square meter for about 6 minutes in a room temperature solution consisting essentially of, by volume, about 11–15% of 70% HF, 81–85% glacial acetic acid and 2–6% H_2O; and

(c) cathodically plating a layer of nickel onto the etched component surface at [2.7] *323* amperes per square meter for about 30 minutes in a nickel sulfamate solution.

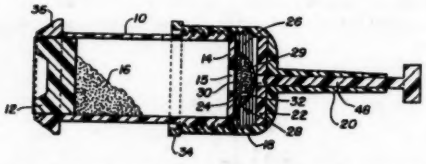
Re. 33,801
MIXING AND DISCHARGE CAPSULE

Russell D. Green, Millsboro, Del., assignor to Dentsply Research & Development Corp., Milford, Del.

Original No. 4,648,532, dated Mar. 10, 1987, Ser. No. 861,481, May 9, 1986. Application for reissue Aug. 15, 1988, Ser. No. 233,866

Int. Cl.[5] B67B *7/48*

U.S. Cl. 222—82 **6 Claims**



1. A combination mixing and discharge capsule comprising in combination, a body adapted to contain a first ingredient and having a piston in one end and the opposite end having a perforated wall on the body, a cap displaceably connected over the end of the body having the perforated wall and forming therewith a separate compartment, said cap having a discharge orifice in the form of a nozzle extending outwardly away from the opposite end of said body, a frangible container enclosing a second ingredient and disposed in said separate compartment with a wall oriented toward said perforated wall, means operable to displace said cap towards said piston and farther onto said body until at least the wall of the container oriented toward said perforated wall is ruptured to permit discharge of the container contents through said perforation into said container body for mixing with the ingredient therein, means operable to puncture the opposite wall of said container comprising a piercing rod **[**initially only partially inserted into said nozzle**]** with the inner end out of contact with said container and the inner end of said rod being extendable through said perforation in said opposite wall to effect perforation of said container, and means to move said piston into said body to engage the mixed ingredients and force the same through said discharge nozzle on said cap.

Re. 33,802
NUMBERED DOCUMENTS

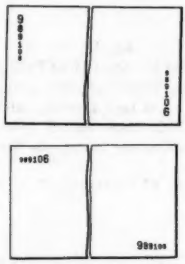
Colin J. Whitehead; Robin Bratchley, and John M. Haslop, all of Berkshire, England, assignors to Thomas De La Rue & Co., England

Original No. 4,645,240, dated Feb. 24, 1987, Ser. No. 726,598, Apr. 23, 1985. Application for reissue Feb. 24, 1989, Ser. No. 315,464

Int. Cl.[5] G09F *3/00*

U.S. Cl. 283—74 **8 Claims**

2. A series of documents which are identical in content except for a number composed of a set of alphabetical or numerical characters which uniquely identifies each document within the series, in which at least two characters of the identifying number differ from each other, in addition to any differences in the letters or digits which they represent, in one or more visible physical characteristics, and in which the identifying number appears twice on the document with the variation between characters in each



number being different, one of the two identifying numbers being provided with the characters one above the other.

Re. 33,803
GAS LASER WITH AT LEAST ONE EXCITATION TUBE WHERETHROUGH GAS IS ACTUALLY FLOWING

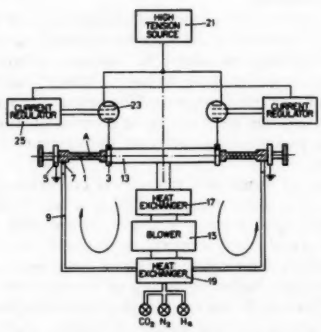
Hardy P. Weiss, Hutten, Switzerland, assignor to PRC Corporation, Landing, N.J.

Original No. 4,704,719, dated Nov. 3, 1987, Ser. No. 786,052, Oct. 10, 1985. Application for reissue Oct. 25, 1989, Ser. No. 426,570

Claims priority, application Switzerland, Oct. 10, 1984, 4861/84

Int. Cl.[5] H01S *3/03*

U.S. Cl. 372—58 **19 Claims**



1. In an axial flow gas transport laser comprising an excitation tube *with an internal surface* through which gas flows along an axis of said tube, an inlet arrangement *located at one end of said excitation tube* to feed gas towards said excitation tube, and an outlet arrangement *located at the other end of the excitation tube* to discharge gas from said excitation tube *whereby the gas fed to said excitation tube flows along the axis of the tube over the entire length of the tube between the inlet arrangement and the outlet arrangement*, the improvement comprising at least one of said inlet and outlet arrangements comprising a circumferential opening arrangement evenly distributed along the periphery of said excitation tube, **[**substantially**]** in a cross-section plane of said tube, and a gas flow channel arrangement *with internal channel surfaces leading* to said opening arrangement, said gas flow channel arrangement at said opening arrangement being directed at least **[**substantially**]** *predominately* in the direction of the excitation tube axis **[**and into the excitation tube**]** *, an internal channel surface of said gas flow channel arrangement steadily transmitting into said internal surface of said tube along a portion of said opening arrangement* for preventing wide **[**serial**]** *areal* turbulances of the flowing gas in said excitation tube.

PLANT PATENTS

GRANTED JANUARY 21, 1992

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

7,769

MINIATURE ROSE PLANT NAMED SAVAPIE

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Oct. 1, 1990, Ser. No. 591,555
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by attractive red and white bi-colored flowers.

7,770

MINIATURE ROSE PLANT NAMED SAVAHALO

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Oct. 1, 1990, Ser. No. 591,556
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—8 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by attractive yellow flowers.

7,771

MINIATURE ROSE PLANT NAMED SAVANICE

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Oct. 1, 1990, Ser. No. 591,131
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—9 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by attractive white flowers of good form.

7,772

MINIATURE ROSE PLANT NAMED 'SPOMAUR'

Raymond A. Spooner, 8285 SW. 185th Ave., Beaverton, Oreg. 97007

Filed Jun. 15, 1990, Ser. No. 538,430
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—10 1 Claim

1. A new and distinct variety of miniature rose plant named 'Spomaur' substantially as herein described and illustrated, being characterized particularly by its clear non-fading crimson red petal coloration, white streaks on the outer two or three petals, high-centered bloom, and reflexing petals.

7,773

DWARF FLOWERING CRAB APPLE TREE NAMED GUINZAM

James W. Zampini, 5052 S. Ridge Rd., Perry, Ohio 44081-0122, assignor to James W. Zampini, Perry, Ohio

Filed Oct. 10, 1990, Ser. No. 595,373
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—34 1 Claim

1. A new and distinct variety of flowering crab apple tree which exhibits the following combination of characteristics:

(a) exhibits a dwarf, generally round and broad growth habit,
(b) forms lateral branches which are somewhat descending with slightly upwardly arching tips,
(c) forms a profusion of attractive dark pink buds which open into blossoms which simultaneously range in coloration form pure white to pink,
(d) forms lateral branches which tend to be stronger and of a larger diameter than those of *Malus sargentii,*
(e) forms larger leaves than *Malus sargentii,* and
(f) forms larger fruit than *Malus sargentii;*

substantially as herein shown and described.

7,774

DWARF GOLDEN MUGHO PINE NAMED 'YAMA GOLD AUREUS'

George Y. Yamamoto, and Terry Y. Yamamoto, both of 5765 Sidney Rd. S.W., Port Orchard, Wash. 98336

Filed Jun. 12, 1990, Ser. No. 537,090
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—50 1 Claim

1. A new and distinct variety of *Pinus m. mugo* (dwarf Mugho pine) substantially as herein shown and described, characterized particularly by its year-round golden needles.

PATENTS

GRANTED JAN. 21, 1992

ERRATA

For CLASS	See PATENT NO.
454-370	5,081,911
454-136	5,081,912
454-343	5,081,913
454-367	5,081,914
229-218	5,082,117
221-211	5,082,126
271-010	5,082,267
271-014	5,082,268
271-065	5,082,269
271-109	5,082,270
271-161	5,082,271
271-186	5,082,272
271-215	5,082,273
385-081	5,082,338
385-014	5,082,339
385-014	5,082,341
385-008	5,082,342
385-034	5,082,343
385-060	5,082,344
385-060	5,082,345
385-051	5,082,346
385-114	5,082,347
385-111	5,082,348
385-002	5,082,349
356-001	5,082,362
356-001	5,082,363
356-005	5,082,364
356-028	5,082,365
356-035	5,082,366
356-073	5,082,367
356-073	5,082,368
356-243	5,082,369
356-328	5,082,370
356-446	5,082,371
205-109	5,082,536
205-139	5,082,537
205-140	5,082,538
205-162	5,082,539
507-130	5,082,576
525-518	5,082,598
419-008	5,082,623
514-617	5,082,654

ERRATA—Continued

514-024	5,082,656
501-120	5,082,739
395-131	5,083,257
395-725	5,083,258
395-325	5,083,259
395-325	5,083,260
395-725	5,083,261
395-500	5,083,262
395-425	5,083,263
395-575	5,083,264
395-800	5,083,265
395-275	5,083,266
395-375	5,083,267
395-012	5,083,268
395-425	5,083,269
395-024	5,083,285
395-115	5,083,286
395-126	5,083,287
395-325	5,083,291
395-143	5,089,720
365-132	5,089,721
395-111	5,089,722
395-156	5,089,723
395-146	5,089,724
395-600	5,089,736
395-425	5,089,737
395-800	5,089,738
395-800	5,089,739
395-575	5,079,740

PATENTS

GRANTED JANUARY 21, 1992

GENERAL AND MECHANICAL

5,081,714
VEHICLE INTERNAL SAFETY BELT
Ing-Nan Liu, No. 38, Muh Tah Rd., Sec. 1, Taipei, Taiwan
Filed Sep. 18, 1990, Ser. No. 584,531
Int. Cl.[5] A41D *20/00*
U.S. Cl. 2—2 **1 Claim**

1. A safety belt for securing two members together comprising:

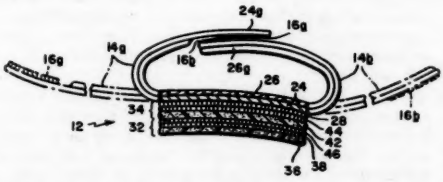
a) a pair of substantially identical belt portions, each belt portion including a pair of opposite ends and a middle elastic part permitting the belt portion to be extended within a certain range of elasticity;

b) the opposite ends of each belt portion being provided with cooperating hook and loop fastener means for permitting the ends to be detachably secured together;

c) the belt portions being connected together at substantially their midpoints; and

d) wherein the belt portions may be flexibly extended around and be secured to two adjacent members for maintaining the members together.

5,081,715
PALM PROTECTOR
Michael F. Mascia, R.R. #1 Box 229 A, Bridgeton, Me. 04009
Filed Jun. 7, 1989, Ser. No. 362,568
Int. Cl.[5] A41D *13/08*
U.S. Cl. 2—20 **10 Claims**



5. The pad assembly defined in claim 4 for protecting the palm of a hand wherein said patch covers the surface of the palm from the palmar crease, over the portion of the deep palmar arch from thenar eminence to the hypothenar muscle group, to the base of the palm and the distal phalanx of the thumb.

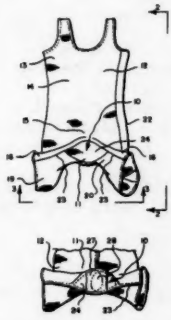
5,081,716
GARMENT WITH BIND-PREVENTING CROTCH CONSTRUCTION
Ruth B. Lehenbauer, 570 N. 600 East, Logan, Utah 84321, and Lois Hugie, 183 N. Center, Hyrum, Utah 84319
Filed Mar. 15, 1991, Ser. No. 669,985
Int. Cl.[5] A41B *9/00*
U.S. Cl. 2—78 B **10 Claims**

1. A garment of cloth material, comprising:

a buttock and crotch portion constructed of flexible cloth; and

a bind-preventing structure, including;

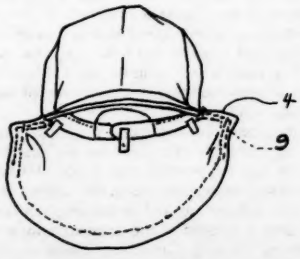
a median strip of pliable material secured to an inside of the buttock and crotch portion, extending from front to rear thereupon, placed to extend along and across at least a portion of the median cleft of a body of a wearer of the garment, said strip having a periphery with opposing foremost and rearmost portions and opposing side portions, and being secured to the inside of the buttock and crotch portion only along a pair of opposing segments of the periphery thereof selected from the group consisting of a pair comprising a rearmost and a foremost segment and a pair comprising two opposing side segments; and



a barrier structure having sides defined by edges, said barrier structure secured to the median strip and extending therealong from front to rear to bridge across at least a portion of the median cleft of the body of the wearer, said structure to be constructed of non-elastic cloth material to be sufficiently less pliable than the cloth of the buttock and crotch portion to prevent the cloth of the buttock and crotch portion from entering into said median cleft; wherein

the median strip extends substantially outward beyond the edges of the barrier at least toward the secured portions of the periphery thereof.

5,081,717
HEADGEAR ATTACHMENT
Aaron N. Shedd, and Mary E. Shedd, both of 9306 Convento Ter., Fairfax, Va. 22031
Filed Oct. 23, 1990, Ser. No. 601,353
Int. Cl.[5] A42B *1/06*
U.S. Cl. 2—199 **5 Claims**



1. A headgear attachment for providing protection for por-

tions of the head and neck of a wearer against sunlight, rain or other conditions of weather, said attachment comprising:

a flexible shield of a size to cover portions of the back of the head and of the back of the neck of the wearer;

a relatively long, narrow, formable member having means by which the wearer, through manual bending, may impart a self-sustained shape to said formable member, said self-sustained shape including an effective length which may differ from the original length of said formable member before bending, whereby said formable member may be selectively made to conform to and fit the posterior portion of any one of a plurality of heads of different sizes;

means for attaching said formable member to said shield adjacent at least one edge of said shield so that, when said formable member is attached to said shield and then appropriately bent, said edge will acquire and retain said self-sustained shape as said self-sustained shape is imparted to said formable member; and

attaching means on said shield adjacent said edge, whereby said headgear attachement may be secured to headgear and worn therewith.

5,081,718

PANTS TYPE GARMENT HAVING A SEAMLESS CROTCH

David C. Carman, Jackson; Frederick E. Liu; Anthony J. DeRosa, both of Wilson, and Margaret Murphy, Jackson, all of Wyo., assignors to Life-Link International, Inc., Jackson, Wyo.

Filed Jun. 29, 1990, Ser. No. 546,528
Int. Cl.[5] A41D *1/06, 13/02*
U.S. Cl. 2—227 **9 Claims**

1. A pants type garment comprising:

a leg portion made from a substantially unitary stretchable piece of material which is symmetric about a center fold;

an upper portion made from a stretchable material;

wherein, prior to being formed into the leg portion, said unitary piece of material defining a pattern containing a first recessed cut and a second recessed cut;

said first recessed cut beginning at a first point on a first edge of the pattern for said leg portion, said point being on the left side of said center fold and in the vicinity of the crotch area of said leg portion, and continuing to a furthest inset point which is located at a first end of the center fold thereby defining a first side of said first recessed cut, and then going back toward said first edge to a second point on said first edge which is on the right side of said center fold and thereby defining a second side of said first recessed cut;

said second recessed cut beginning at a third point which is located on a second edge opposite the first edge of the pattern for said leg portion, said third point being on the left side of said center fold and in the vicinity of the crotch area of said leg portion, and continuing to a furthest inset point which is located at the opposite end of the center fold thereby defining a first side of said second recessed cut, and then going back toward said second edge to a fourth point which is located on said second edge which is on the right side of said center fold and thereby defining a second side of said second recessed cut;

said center fold being at the crotch of the pants type garment and beginning at about the furthest inset point of said first recessed cut and continuing to the furthest inset point of said second cut;

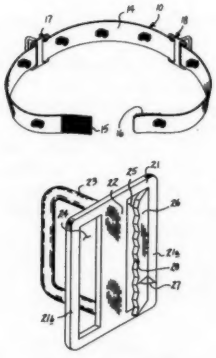
said upper portion being attached to said leg portion by a seam along the first and second sides of the first recessed cut and the first and second sides of the second recessed cut.

5,081,719

MOTORCYCLE SAFETY BELT

Charles E. Donnelly, 4811 Steamboat Cir., Rapid City, S. Dak. 57702

Filed May 7, 1990, Ser. No. 519,811
Int. Cl.[5] A41F *9/00*
U.S. Cl. 2—311 **4 Claims**



1. A motorcycle safety belt comprising,

an elongate flexible belt web defined by a finite length, and further defined by a fixed and constant cross-sectional configuration including a predetermined height, the belt web including a first end and a second end, the first and second ends selectively securable together, and

a first handle member and a second handle member slidably mounted along the belt web, wherein the first and second handle members each include locking means for selective securement of the first and second handle members to the belt web, and

wherein the belt web includes an interior surface and an exterior surface, wherein the interior and exterior surfaces are coextensive relative to one another along the belt web, and the belt web includes a first hook and loop fastener surface formed to the exterior surface of the belt web at the first end, and a second hook and loop fastener surface selectively securable to the first hook and loop fastener surface formed to the interior surface of the belt web at the second end, and

wherein the first and second handle members each include a planar support frame, the planar support frame including spaced and parallel top and bottom legs spaced apart the predetermined height defined by the belt web, and further including a left leg and a right leg, each arranged parallel relative to one another and orthogonally and integrally formed to the top and bottom legs to define the planar support frame, and a central support flange orthogonally bisecting and aligned in the same plane as the top and bottom legs, wherein the central support flange defines a first opening and a second opening between respective left and right legs of the support frame, and further including a "U" shaped handle orthogonally and fixedly mounted to

an exterior surface of the central support flange extending rearwardly of the planar support frame.

5,081,720

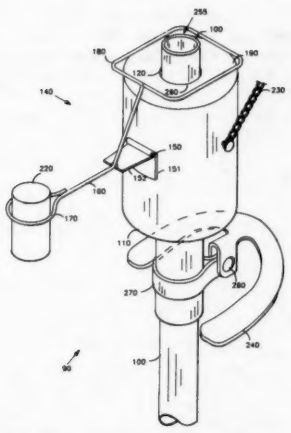
DUAL FLUSH FLOAT

Donald B. Ames, and Ahmad Zenali, both of 16949 S. Western Ave., #6, Gardena, Calif. 90247

Filed Feb. 20, 1991, Ser. No. 658,064

Int. Cl.[5] E03D *1/33*

U.S. Cl. 4—324 **3 Claims**



1. In a flush tank which has a chamber for water, a float controlled inlet valve, a flush actuation arm, a flush outlet and an outlet cover, the outlet cover being attached to the actuation arm with a first flexible link, the improvement of a dual mode flush control apparatus comprising:

a fixed vertically disposed float guide adjacent to said flush outlet;

a primary float including a means for slidable engagement to said float guide enabling said primary float to move freely over a vertical path established by said float guide;

a catch arm having a pivot for pivotal attachment of said catch arm to said primary float, one portion of said catch arm extending away from said primary float and terminating in an attachment means, a further portion of said catch arm extending over the top of said primary float, said pivot permitting a first catch arm position whereby said further portion of said catch arm blocks said path of said float guide preventing said primary float from moving downward along said float guide, and said pivot permitting a second catch arm position whereby said further portion of said catch arm does not block the path of said float guide, thereby permitting said primary float to move vertically downward along said float guide;

a secondary float secured by said attachment means;

a second flexible link fixed at one end to said primary float and at the other end to said flush actuation arm; and

a contact arm attached to said primary float and extending therefrom for pressing against said outlet cover to force said cover into a position for closing said flush outlet, whereby

a full flush is achieved by raising said flush actuation arm causing said first flexible link to pull said outlet cover into a raised position uncovering said flush outlet, thereby allowing said water to flow out of said chamber, and holding said flush actuation arm in said raised position until said secondary float drops with the water level, thereby causing said further portion of said catch arm to assume said first catch arm position thereby preventing said primary float from falling, and a partial flush is achieved by raising said flush actuation arm but not holding said flush actuation arm in said raised position until said secondary float drops with the water level, thereby allowing both said primary and said secondary floats to fall together with said water level so that said contact arm can press said outlet cover over said flush outlet prematurely.

5,081,721

METHOD OF USING INFLATABLE PATIENT SUPPORT WITH A BEDPAN

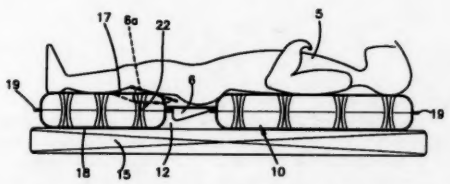
Sandra Stefano, 25600 Columbus Rd., Bedford Heights, Ohio 44146

Continuation-in-part of Ser. No. 387,217, Jul. 28, 1989, Pat. No. 4,949,409, which is a continuation-in-part of Ser. No. 244,287, Sep. 15, 1988, abandoned. This application May 31, 1990, Ser. No. 531,250

The portion of the term of this patent subsequent to Aug. 21, 2007, has been disclaimed.

Int. Cl.[5] A61G *7/02*

U.S. Cl. 5—90 **16 Claims**



1. A method of using a pneumatic lifting device placed under a supine-positioned human and meant for use with a bedpan of common commercial use, wherein said lifting device comprises an upper sheet and a lower sheet, said two sheets are attached at the edges thereof to form a bladder capable of holding air therein, wherein said lifting device has a through passage through the thickness thereof in register with the rectal area of said supine-positioned human, wherein the shape of said through passage in plan view substantially matches the shape of said bedpan in plan view, and wherein said lifting device is adapted to be inflated or deflated as desired, the method including inflating said lifting device at relatively low pressures as in an air mattress such that when said lifting device is inflated, said through passage in said lifting device forms a cavity for receiving said bedpan in register with the rectal region of said human, and wherein, owing to said low inflation pressure, the top surface of said lifting device can be depressed as another step in said method, thereby to allow said bedpan to be inserted into and removed from said cavity without moving the legs or hips of said supine-positioned human.

5,081,722

ADJUSTABLE CRIB WITH VIBRATOR, MOISTURE SENSOR, FAN, MICROPHONE AND SPEAKER

Yuan-Chieh Yu, No. 5, Lane 20, Dah Der Rd., 7 Duu Dist., Ji-Long City, Taiwan

Filed Mar. 13, 1991, Ser. No. 668,898

Int. Cl.[5] A47D *7/03, 9/02*

U.S. Cl. 5—99.1 **2 Claims**

1. A baby crib comprising:

a pair of longitudinally extending side frames;

a pair of grille members extending transversely on opposing longitudinal ends of said side frames and fixedly secured to said side frames, said side frames and said grille members forming an internal crib cavity;

a pair of bed floor members rotatably mounted to said side frames, each of said floor members having an axle member mounted on one end thereof;

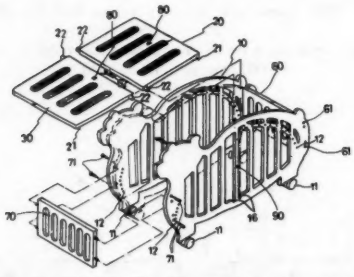
a pair of circular recesses formed within each of said side frames at a lateral mid-point for insert of said axle member;

a plurality of locating holes formed through each of said side frames on opposing longitudinal ends of said side frames within said crib cavity;

said locating holes being formed along an arc such that the distance from each of said locating holes to a corresponding circular recess in said side frame is a constant;

said axle members extending transversely beyond the transverse extension of said side frames;

said floor members for mounting within said crib cavity to provide a crib bottom by placing said extended axle members into respective circular recesses formed within said side frames, said floor members positionally located at a



predetermined inclination by inserting an extended bolt member of said floor members into pairs of said locating holes of said side frames for supporting upper and lower portions of a baby's body;

a pair of microphones mounted internal to said crib cavity, each of said microphones being mounted to a respective one of said side frames;

a pair of moisture sensors located within each of said floor members for sensing moisture content of said floor members;

means for vibrating said floor members responsive to an audio input to said pair of microphones; and,

blower means for expelling air internal said crib cavity responsive to moisture sensing by said moisture sensors.

5,081,723

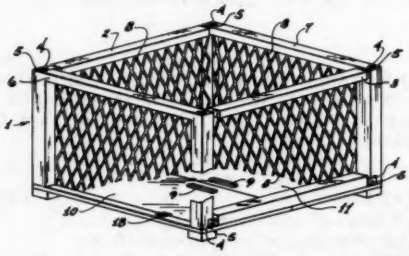
PLAYPEN WITH DETACHABLE SIDES USED AS SECURITY GATES

David R. Saunders, 10 Fox Chapel, Williamsville, N.Y. 14221

Filed Aug. 8, 1991, Ser. No. 742,330

Int. Cl.[5] A47D *7/02, 11/00, 13/06*

U.S. Cl. 5—100 **17 Claims**



1. A playpen having in combination a floor section and substantially perpendicular to said floor section an enclosing structure which forms a fence-like enclosure around said floor section, at least a portion of said enclosing structure being removable from said playpen, said portion defining a removable section, said removable section having connecting means adapted to be connected to a remaining portion of a non-removable portion of said enclosing structure, said removable section also comprising a securing means, said securing means adapted to be secured to a door frame when said removable section is to be used as a security gate, said removable section having at least a portion of its width dimension laterally adjustable to thereby frictionally and securing fit between door frames that define openings of various widths.

5,081,724

FOLDING BABY BED

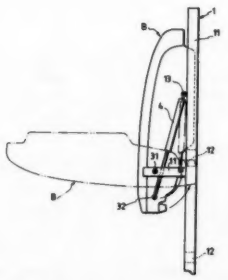
Takehiko Takahashi, Tokyo, and Yuji Shimizu, Aichi, both of Japan, assignors to Combi Corporation, Tokyo, Japan

Filed May 18, 1990, Ser. No. 524,940

Claims priority, application Japan, Aug. 21, 1989, 1-96757[U]

Int. Cl.[5] A47C *14/40;* **A47D** *7/00*

U.S. Cl. 5—136 **4 Claims**



1. A folding baby bed comprising:

a body portion having side and cross frame members and a cavity formed in a front upper half portion thereof;

a bed portion pivotally attached to at least one of said side frame members through pivotal shafts projected from said bed portion at opposite end portions thereof and in a vicinity of a lower end portion thereof, so that said bed portion is able to be vertically folded and horizontally extended, said bed portion having a base end portion which abuts on at least one of said cross frame members so that said bed portion is maintained in a horizontal state when said bed portion is horizontally extended, said bed portion being housed in said cavity portion formed in said body portion when said bed portion is in a vertically folded state; and

posture maintaining urging means coupled to said body portion and said bed portion, for applying a bias force such that when said bed portion is vertically folded, the applied bias force maintains said bed in said vertically folded state.

5,081,725

WATER BED PADDED RAIL ARRANGEMENT

Eric J. Neese, 7933 Marywood Dr., Newburgh, Ind. 47630

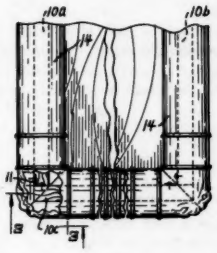
Filed Jan. 25, 1989, Ser. No. 301,107

Int. Cl.[5] A47C *28/08*

U.S. Cl. 5—424 **3 Claims**

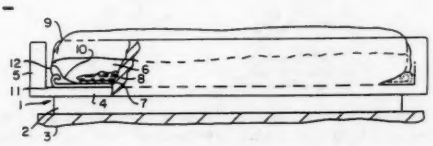
1. A padded rail arrangement for a water bed defined by a framework including assembled side and bottom rails comprising a selectively detachable and flexible pad section overlying a portion of each of said rails, where said pad section includes a longitudinal cut-out portion along the bottom surface thereof, where said cut-out portion is received on said portion

of each of said rails, where adhesive means is disposed within said cut-out portion, and where wedge shaped portions of



adjacent pad section are removed to define a corner of said framework and present a continuous padded rail.

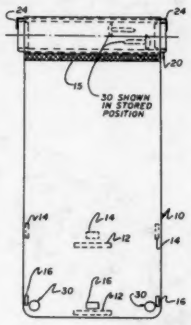
5,081,726
WATER BED MATTRESS COVER AND METHOD OF APPLYING
Daniel M. McCourt, E2281 King Rd., Waupaca, Wis. 54981
Filed Mar. 17, 1989, Ser. No. 325,246
Int. Cl.[5] A47C *21/02*
U.S. Cl. 5—451 **7 Claims**



1. In combination, a water bed having a support structure including a base wall and an encircling sidewall, a water filled rectangular mattress located on said base wall and within said sidewall and confined by said sidewall and having four corners, a cover overlying said mattress and having outer edge portions partially overlapping the sidewalls of said mattress, cover couplers located at each corner of said mattress, each of said couplers including a first coupling unit secured to said support structure and a second coupling unit secured to said outer edge portion, said first and second coupling units being releasably connected and establishing releasable fixing of said cover over said mattress, each of said first coupling units including a flat bracket in a diamond-shaped configuration, said bracket being located with an apex of the bracket aligned with the corner of the mattress, and having a sale hook member secured to the apex of the bracket, said bracket includes a single integral rod, said hook being integral with and an extension of said rod.

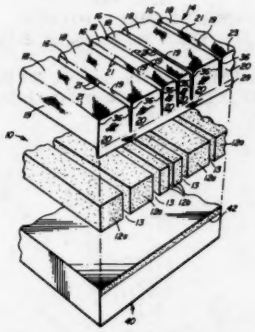
5,081,727
ROLL-UP BEACH TOWEL KIT
Nicholas W. Ippolito, 36 Gehrig St., Commack, N.Y. 11725
Filed Aug. 2, 1991, Ser. No. 739,508
Int. Cl.[5] A47G *9/06*
U.S. Cl. 5—419 **4 Claims**

1. A beach kit comprising a hollow, generally cylindrical, insulating foam pillow defining an insulating container having hinged covers at its ends, and a generally rectangular towel portion having at one of its ends holes adapted to accommodate anchoring stakes, the opposite end of the towel portion comprising a band of elastic material, said opposite end of the towel portion being folded over and secured to the towel body to define a loop portion of a diameter smaller than the diameter of the pillow so that the loop portion may be stretched and snugly and removably secured to the pillow, the towel, when



secured to the pillow by said loop, adapted to be rolled around and retained on the pillow.

5,081,728
MATTRESS AND MATTRESS COVER
Charles W. Skinner, 9375 - 209A Street, Langley, British Columbia, Canada V1M 1S2
Filed Oct. 22, 1990, Ser. No. 602,212
Int. Cl.[5] A47C *27/14*
U.S. Cl. 5—465 **33 Claims**



15. A combination mattress, mattress cover and bed frame, comprising:

(a) a mattress comprising a plurality of parallel mattress blocks of generally parallelepiped shape, each block having opposed top and bottom surfaces, opposed side surfaces and opposed end surfaces;

(b) a mattress cover for removably covering said mattress, said cover comprising a sheet having a sheet portion for covering the upper surface of said mattress, a plurality of transverse projecting segments attached to said sheet portion insertable between said blocks, said sheet further comprising a plurality of flaps attached to said sheet portion for covering said mattress block end surfaces; and

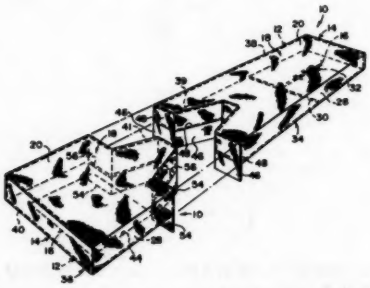
(c) a bed frame having vertical sidewalls, wherein said frame sidewalls comprise longitudinally extending fastening means for releasably fastening said flaps to said sidewalls.

5,081,729

DISPOSABLE FITTED BIRTHING SHEET

Elisa C. Menday, P.O. Box 1024, Lebanon, N.H. 03766

Filed Apr. 24, 1991, Ser. No. 690,289
Int. Cl.[5] A47G *9/04*
U.S. Cl. 5—487 **9 Claims**



1. A disposable fitted birthing sheet for a mattress which comprises:

a) a covering having a contoured shape to fit about the mattress;

b) means in the bottom surface of said covering for providing an access so that the mattress can fit into said covering, said access means includes the bottom surface of said covering having a "T"-shaped overlap slot so that the mattress can be inserted therein, and a plurality of self adhesive tabs spaced apart within the bottom surface of said covering to fasten the "T"-shaped overlap slot in a closed position;

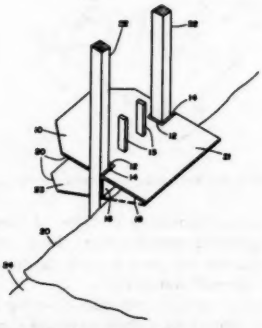
c) means in the top surface of said covering, for keeping a patient dry and infection free during a prebirthing and birthing process.

5,081,730

CRIB BLANKET HOLDER

Shona Moody, 8177 Elliott St., Vancouver, B.C., Canada V5S 2P3

Filed May 31, 1991, Ser. No. 708,390
Int. Cl.[5] A47G *9/04*; A47D *15/02*
U.S. Cl. 5—508 **10 Claims**



1. A crib blanket holder, comprising:

(a) a pair of opposed rigid lever arms;

(b) fulcrum means affixed to said lever arms to provide for pivoting of said lever arms, said fulcrum means dividing said arms into jaws and handle regions;

(c) a pair of opposed crib post recesses in each of said lever arms so as to frictionally receive adjacent crib posts therein when said arms are disposed horizontally, said recesses permitting the vertical adjustment of the crib blanket holder relative to the two cooperating, adjacent crib posts; and

(d) biasing means for biasing said arms so as to close said jaws together;

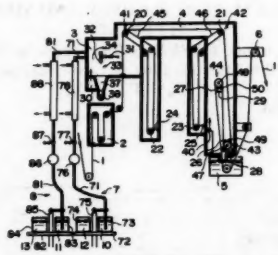
wherein said arms are movable in response to force manually applied to said handle regions to open said jaws and receive a blanket edge therebetween and cause said jaws to close on and clamp said blanket edge when said force is removed.

5,081,731

METHOD OF CONTINUOUS CHANGING DYE-COLOR IN SPRAY DYEING

Yoshimichi Yamakita, and Mitsugu Umino, both of Toyama, Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed May 14, 1990, Ser. No. 522,975
Claims priority, application Japan, May 18, 1989, 1-124762
Int. Cl.[5] D06B *1/02, 23/30*
U.S. Cl. 8—151 **3 Claims**



1. A method of continuous changing dye-color during spray dyeing of a long tape, which is to be dyed, said method comprising:

continuously moving the tape over guides;

spraying a first dye-solution on said moving tape from a first dyeing-nozzle connected to a first feeding line to form a first portion of the tape with a color of the first dye-solution;

stopping said spraying with said first dye-solution to create a dwell;

exchanging said first dyeing-nozzle with a second dyeing-nozzle, which is connected to a second feeding line with a second dye-solution, during said dwell;

then spraying the second dyeing-solution on the tape from the second dyeing-nozzle to form a second portion of the tape with a second color of the second dye-solution separated by an undyed portion that was created during the dwell;

cleaning said first dyeing-nozzle and said first feeding line with a first cleaning-solution, which is fed through said first feeding line, while said second dye-solution is being sprayed on said tape; and

cleaning each of the guides as the undyed portion passes over the respective guide.

5,081,732

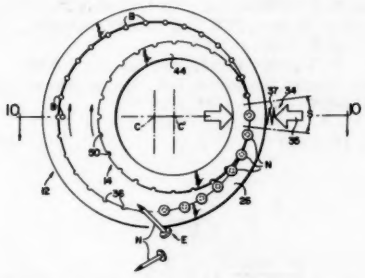
ROTARY HEADING MACHINE

Wilhelm A. Steinhilber, 124 White Birch Dr., Guilford, Conn. 06437

Filed Feb. 25, 1991, Ser. No. 660,663
Int. Cl.[5] B21G *3/20*
U.S. Cl. 10—52 **19 Claims**

1. Rotary workpiece heading machine comprising rotary transporting means for receiving at least one axially elongate workpiece and conveying the one workpiece along an arcuate path to and through a forming station with the axis of the one workpiece in generally parallel axial alignment with the axis of said arcuate path and including an annular ring having an inner

peripheral surface and supported for rotation about the axis of said arcuate path, rotary clamping means for cooperating with said rotary transporting means at said forming station to securely hold the one workpiece as the one workpiece is conveyed through said forming station and including a rotary clamping member supported for rotation within said annular ring and about an axis parallel to said axis of said arcuate path



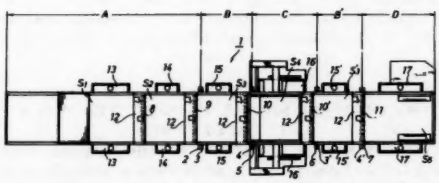
and defining another peripheral surface cooperating with said inner peripheral surface to securely hold the one workpiece therebetween as the one workpiece is conveyed through said forming station, and forming means at said forming station for engaging an associated end portion of the one workpiece and forming a head on the one workpiece as the one workpiece is conveyed through said forming station by said rotary transporting means.

5,081,733

AUTOMATIC CLEANING APPARATUS FOR DISKS

Hideo Kudo, Fukushima, Japan, assignor to Shin-Etsu Handotai, Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1990, Ser. No. 564,541
Claims priority, application Japan, Aug. 9, 1989, 1-204821
Int. Cl.[5] A46B *13/04*
U.S. Cl. 15—77 **14 Claims**



1. An automatic cleaning apparatus for diskshaped workpieces, comprising the following sections detachably connected in a row in the following order to form a fluid passage:

a work feeder section equipped with a work transportation means, for supplying the workpieces to be cleaned one by one into said fluid passage in a manner such that each workpiece is always kept in a liquid,

a first isolator section equipped with a workpiece transportation means, for isolating a scrubber section from the workpiece feeder section by means of a liquid, through which the workpiece is transported,

said scrubber section being equipped with a workpiece transportation means and a scrub means which is adapted to receive a workpiece and clean the both faces, at once, of the workpieces within a liquid,

A second isolator section equipped with a workpiece transportation means, for isolating a workpiece receiver section from the scrubber section by means of a liquid, through which the workpiece is transported, and

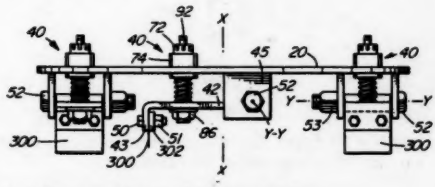
said workpiece receiver section being equipped with a workpiece transportation means, for receiving the cleaned workpiece within a liquid through which the workpiece is transported, and recovering the same from the liquid.

5,081,734

FLOOR SCRAPING MACHINE

Reginald E. Sandford, and Robert R. Alexander, both of Victoria, Canada, assignors to The Re Partnership, Victoria, Canada

Filed Oct. 9, 1990, Ser. No. 593,987
Int. Cl.[5] A47L *11/14, 13/08;* B26B *25/00*
U.S. Cl. 15—93.1 **7 Claims**



1. A floor scraping machine, comprising:

(a) a mounting plate rotatable about a vertical axis;

(b) a plurality of blade holding assemblies each independently mounted to said plate for rotation therewith, each assembly including:

(i) a blade mount for securing a scarfing blade to the assembly below said plate in a floor scraping position; and

(ii) biasing means acting with a biasing force on said mount for nonrigidly urging said mount with said blade to a bias position below said plate;

(iii) means for manually adjusting the bias position of the associated blade

and,

(c) drive means for rotating said mounting plate about said axis.

5,081,735

GOLF IRON CLEANER

William B. Wyatt, 9545 Inavale Dr.; Herbert M. Burnette, 8208 Wikle Rd. East, both of Brentwood, Tenn. 37027; Joseph G. Callahan, 5929 Abbott Dr., Nashville, Tenn. 37211, and Blake A. Mevis, 811 18th Ave., South, Nashville, Tenn. 37203

Filed May 18, 1990, Ser. No. 525,735
Int. Cl.[5] B08B *1/00*
U.S. Cl. 15—104.92 **16 Claims**

1. A golf iron cleaning device including:

a) a container;

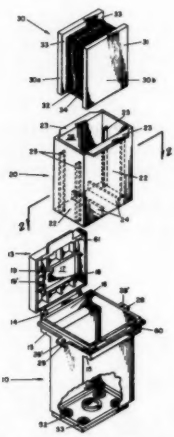
b) a backing brush and a facing brush each consisting of a brush block and bristles;

c) the brushes being removably mounted within the container and facing each other;

d) the bristles of the brushes having opposing ends, one end of each bristle being connected to a brush block and the other end being a free end, projecting from the brush block, and extending toward the center of the container;

e) longitudinally of the cleaning device, the bristles are of varying lengths; and

f) the varying lengths of the bristles are such that, moving in one direction longitudinally along the cleaning device, the length of the bristles are gradually increased over at least a portion of at least one of the brushes.

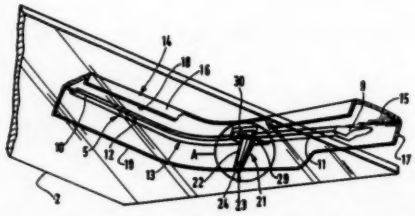


5,081,736

STREAMLINED WINDSHIELD WIPER WITH SHOCK ABSORBER

Monsieur W. Schon, Saint-Etienne/Usson, France, assignor to Valeo Systemes d'Essuyage, Montigny-Le-Bretonneux, France

Filed Jan. 16, 1991, Ser. No. 641,859
Claims priority, application France, Jan. 17, 1990, 90 00481
Int. Cl.[5] B60S *1/32*
U.S. Cl. 15—250.35 **9 Claims**



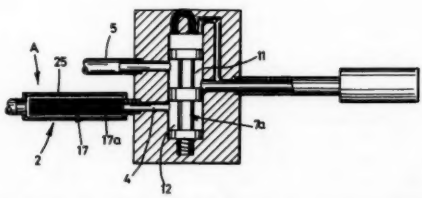
1. A windshield wiper assembly comprising a windshield wiper arm (5) pivotally connected at one end to a driving spindle (7) for oscillatory motion over a swept surface, said pivotal connection including a spring force urging said wiper arm against said swept surface, a windshield wiper blade (3) connected to said wiper arm at an end remote from said one end, a streamlined cowl (14) having a top (15) and sides (16, 17) embracing said wiper arm said cowl sides extending towards said swept surface but spaced therefrom; and a shock absorbing means (21) projecting from said cowl towards said swept surface but terminating at a location below said cowl sides but above said swept surface such that said shock absorbing means cushions the blow when said wiper assembly strikes said swept surface under urging of said pivot means spring force after being manually rocked around said pivot to a service position spaced from said swept surface and wherein said wiper arm comprises a first linear section (11) and a second linear section (12) joined by a curved zone (13), said linear sections forming an included angle less that 180 degrees; and said shock absorbing means projecting from said cowl in the neighborhood of said curved zone.

5,081,737

APPARATUS FOR ELIMINATING DEPOSITS OF FLOATING FIBERS

Theo Dües, Ahaus, Fed. Rep. of Germany, assignor to Gebruder Schmeing GmbH & Co., Fed. Rep. of Germany

PCT No. PCT/DE88/00356, § 371 Date May 24, 1989, § 102(e) Date May 24, 1989, PCT Pub. No. WO89/01065, PCT Pub. Date Feb. 9, 1989
PCT Filed Jun. 13, 1988, Ser. No. 331,659
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1987, 3724708; Aug. 29, 1987, 3728910
Int. Cl.[5] A47L *5/14*
U.S. Cl. 15—316.1 **18 Claims**



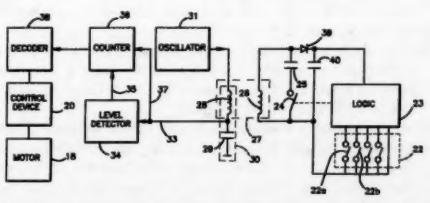
1. A device for generating air pulses, particularly for use in inhibiting accumulations of matter suspended in air, comprising at least one storage vessel for pressurized air; a throttling element connectible to a source of pressurized air; and a valve arranged to establish communication between said throttling element and said storage vessel, said valve having a passage, an air delivery conduit branching from said passage and connectible with said storage vessel, an air inlet conduit branching from said passage and connectible with said throttling element, an air discharge conduit for air pulses branching from said passage, and a valving element movable in said passage between a first position in which said air delivery conduit communicates with said air inlet conduit but is substantially sealed from said air discharge conduit and a second position in which said air delivery conduit communicates with said air discharge conduit but is substantially sealed from said air inlet conduit.

5,081,738

MOTOR SPEED SIGNAL TRANSMITTER FOR A VACUUM CLEANER

Mikael A. W. Schiller, Malmö ; Per A. Melin, Upplands Väsby, and Leif E. Edlund, Upsala, all of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

PCT No. PCT/SE90/00050, § 371 Date Oct. 11, 1990, § 102(e) Date Oct. 11, 1990, PCT Pub. No. WO90/09139, PCT Pub. Date Aug. 23, 1990
PCT Filed Jan. 24, 1990, Ser. No. 582,947
Claims priority, application Sweden, Feb. 14, 1989, 8900504
Int. Cl.[5] A47L *9/28*
U.S. Cl. 15—339 **9 Claims**



1. An arrangement in a vacuum cleaner (10) of the kind

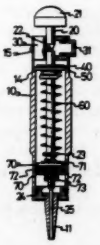
connected to a dust collecting nozzle (**14**) via a hose (**11**) having a hose handle (**12**), the vacuum cleaner (**10**) having a suction fan (**17**), driven by an electric motor (**18**), and an electric control device (**20**) for controlling motor speed for different operating modes, the control device (**20**) being manually operated by an operating member (**21**) having a plurality of operating mode settings, the operating member being mechanically connected to an operating device (**22**) having a plurality of electrical contacts, each of said electrical contacts corresponding to an operating mode setting, the operating device being electrically connected to the control device (**20**) via two coils, magnetically coupled to each other, of which a primary coil (**28**) in a primary circuit is disposed in the vacuum cleaner and a secondary coil (**26**) is disposed in the hose, conversion means (**31,34,36,38**) disposed in said vacuum cleaner, being provided to detect different electrical states of a secondary circuit (**25,26**) having as a part said secondary coil (**26**), said different electrical states being caused by the operating device, characterized in that the operating device (**22**) is connected through a logic means (**23**) to cause the secondary circuit (**25,26**) to take one of two different electrical states depending on the operating mode setting of the operating member (**21**), to keep the secondary circuit (**25,26**) in one of the said states during a time period depending on the operating mode set.

5,081,739

SOLDER-REMOVING TOOL

James Kao, No. 35, Lane 269, Szu Wei Rd., Panchiao, Taipei Hsien, Taiwan

Filed Jun. 25, 1991, Ser. No. 720,631
Int. Cl.[5] A47L *5/04*
U.S. Cl. 15—341 **6 Claims**



1. A solder-removing tool, comprising:

a cylinder having a nozzle disposed in a bottom end thereof, a seat in a top end thereof, and an annular flange formed in an inside periphery below said seat;

a shaft with a cap on a first end thereof having an annular groove formed therein near said cap;

a housing being fixed in said top end of said cylinder and having an inner chamber;

a latching means for latching said shaft in an extended position by means of said annular groove, said latching means being received by said seat and contained within said inner chamber of said housing;

a piston assembly being fixed to said shaft at a second end thereof;

a spring seat being disposed around said shaft and retained by said annular flange;

a spring being disposed around said shaft and received by said spring seat at a first end thereof and fixed to said shaft at a second end thereof; and

a damping means for absorbing recoil shock being disposed between said spring seat and said housing.

5,081,740

RECONFIGURABLE SLIDE FOR MOVING FURNITURE

Terry C. Smith, 16435 SE. 34th St., Bellevue, Wash. 98008

Filed Oct. 22, 1990, Ser. No. 600,863
Int. Cl.[5] A47B *91/06*
U.S. Cl. 16—42 R **7 Claims**

2. A reconfigurable slide for placement under a furniture leg to facilitate sliding on a floor surface comprising in combination

a rigid slide cup having a uniformly flat bottom surface and upwardly extending side surfaces with a curvilinear surface transitioning its bottom surface to its side surfaces to facilitate movement over floor irregularities and a corresponding inner surface, and

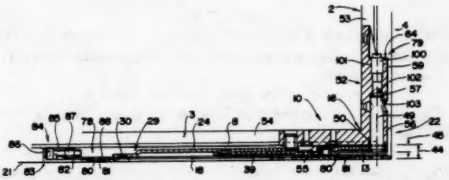
a removable insert in the slide cup made of resilient rubber having a uniformly flat upper surface for receiving a furniture leg around which the insert collapses to resist sliding of the leg in the insert and having a contoured surface matching the slide cup inner surface so that the slide cup and the insert are uniformly in face-to-face contact over the cup inner surface to resist sliding of the insert in the slide cup.

5,081,741

HINGE FITTINGS FOR PIVOTING AND TILTABLE DOORS, WINDOWS OR THE LIKE, SITUATED IN RABBETS OF THE OPENING FRAME AND THE FIXED FRAME

Laurent Aumercier, Phalsbourg, France, assignor to Ferco International Usine De Ferrures De Batiment, Sarrebourg, France

Filed Sep. 20, 1989, Ser. No. 409,890
Claims priority, application France, Oct. 11, 1988, 8813516
Int. Cl.[5] E05D *7/04, 3/10, 15/52*
U.S. Cl. 16—238 **15 Claims**



1. Hinge fittings for pivoting a tiltable member in which an opening frame partially overlaps a fixed frame, comprising:

a corner bearing;

a casement stay;

each of said corner bearing and said casement stay being fixed in a rabbet and including an auxiliary stay arm, a connecting rod and a second stay arm;

each of said auxiliary stay arm, said connecting rod and said second stay arm having two ends, with one end being hingedly connected by a hinge connection on a support to at least one of a bottom rail and a top rail of the fixed frame, the other end of said auxiliary second arm and said second stay arm cooperating with at least one of a top rail or a bottom rail of the opening frame and the other end of said connecting rod being hingedly connected by a hinge connection to said second stay arm;

adjustable positioning means for adjustable lateral and verti-

cal positioning of the opening frame in relation to the fixed frame; and

compression means for pressing the opening frame against the fixed frame.

5,081,742

HINGE DEVICE HAVING MECHANISM FOR STOPPING MOVABLE MEMBER AT OPEN POSITION

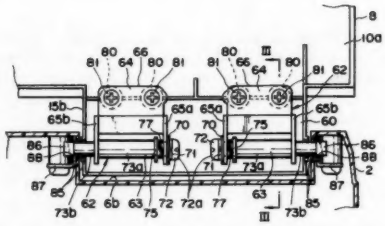
Takaichi Kobayashi, Itsukaichi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 22, 1990, Ser. No. 542,119

Claims priority, application Japan, Jun. 23, 1989, 1-162227

Int. Cl.[5] E05D *7/00*

U.S. Cl. 16—337 **14 Claims**



1. A hinge device for rotatably connecting first and second sections of an apparatus, the hinge device comprising:

a shaft comprising:

first and second ends, the first end being connected to the first section; and

first and second portions, the first portion having a diameter greater than a diameter of the second portion, the first portion cooperating with the second portion to form an edge;

means, connected to the second section, for supporting the second section, the supporting means being rotatably connected to the second portion of the shaft; and

ring-shaped spring means, compressed between the edge and the supporting means, for generating friction between the first edge and the supporting means to suppress rotation of the supporting means around the shaft when the supporting means is rotatably moved.

5,081,743

FRICTION STAY AND ADJUSTABLE FRICTION SLIDER

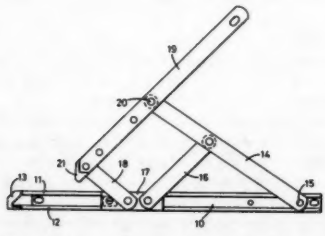
John Mayes, 17 Kingsmead Road, Arle, Cheltenham, Glos Gl51, United Kingdom

Filed Jun. 14, 1990, Ser. No. 538,878

Claims priority, application United Kingdom, Jun. 20, 1989, 8914144

Int. Cl.[5] E05D *11/08, 15/00*

U.S. Cl. 16—341 **18 Claims**



1. A slider for a track, said slider comprising a slider body adapted to be slidably received in the track, and said body including a recess having mounted therein a cam which is rotatable so as to bear against the sides of the recess, said cam being adjustable to provide variation in the degree of friction between the slider and the track throughout a range of values.

5,081,744

METHOD AND DEVICE FOR CHANGING FIBER SLIVER CONTAINERS ON TEXTILE MACHINES

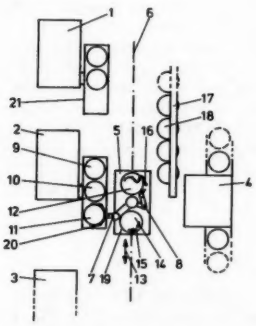
Marcel Siegenthaler, Effretikon, and Niklaus Gartenmann, Winterthur, both of Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed Nov. 7, 1990, Ser. No. 610,007

Claims priority, application Switzerland, Nov. 7, 1989, 04014/89

Int. Cl.[5] D01H *9/18;* **B65H** *67/06*

U.S. Cl. 19—159 A **10 Claims**



1. A method of changing fiber sliver containers on textile machines having magazines for supporting a plurality of said sliver containers and preparing an end of fiber sliver carried in said containers for feeding said sliver to a textile material processing machine having a feed table positioning a plurality of sliver containers, said containers having a rim and an outer shell, comprising the following steps:

(a) filling at least one sliver container with fiber sliver on a magazine;

(b) transferring a filled sliver container from said magazine to a transport vehicle disposed adjacent to said magazine;

(c) dropping said end of said fiber sliver over the rim adjacent the outer shell of said sliver container,

(d) replacing said filled sliver container with an empty sliver container;

(e) moving said transport vehicle to a point adjacent to said feed table;

(f) catching and clamping said end of said fiber sliver of said filled sliver container while said transport vehicle moves from said magazine to said feed table;

(g) moving said end of sliver into a transfer position;

(h) transferring said filled sliver container to said feed table; and

(i) transferring said sliver end to said textile material processing machine for processing said textile fiber sliver material.

5,081,745

DEVICE FOR ROTATING TEXTILE MATERIAL CONTAINERS

Marcel Siegenthaler, Effretikon, Switzerland, assignor to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed Oct. 30, 1990, Ser. No. 605,825

Claims priority, application Switzerland, Nov. 7, 1989, 04015/89

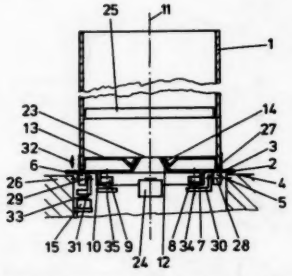
Int. Cl.[5] B65H *54/80*

U.S. Cl. 19—159 R **13 Claims**

1. Apparatus for supporting textile material for supplying textile machinery, comprising:

(a) a container supporting plate supported on supporting and guide rollers for rotation about a vertical axis, and being movable in the direction of said vertical axis and said supporting plate having an aligning and driving surface for engaging a bottom of a container for said textile material, said supporting plate laying loosely on said supporting rollers;

(b) said container for holding said textile material having said bottom with an aligning and supporting surface mating with said aligning and driving surface of said support-



ing plate to align a longitudinal axis of said container with said vertical axis of said supporting plate for rotation about said axis;

(c) drive means for rotating said supporting plate and therefore said container about said vertical axis;

(d) a guide ring connected to the underside of said support plate, said guide ring and said guide rollers forming a radial guide to said support plate; and

(e) supporting elements for said support rollers, at least one of said supporting elements being movable in the direction of said vertical axis and being springloaded.

5,081,746

FLEXIBLE CLOSURE DEVICE

Edward J. Czwartacki, 627 A E. Third St., Nescopeck, Pa. 18635

Filed Jul. 2, 1990, Ser. No. 547,020

Int. Cl.[5] B65D *63/00*

U.S. Cl. 24—17 B **2 Claims**

1. A one-piece device for closing the flap on a file or envelope which has a flap with an aperture defined therein comprising a one-piece stretchable body of circular configuration, a neck portion from the body of a length of at least as big as the envelope thickness and a tab which can be compressed to allow insertion of the tab into the aperture in the flap whereby the body can be stretched around the file in a fixed position.

5,081,747

SLIDE FASTENER SLIDER

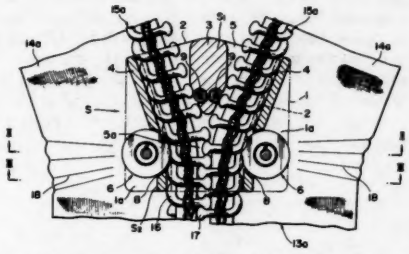
Toshiaki Takizawa, Kurobe, and Yutaka Tominaga, Toyama, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Oct. 1, 1990, Ser. No. 591,277

Claims priority, application Japan, Oct. 2, 1989, 1-115935[U]

Int. Cl.[5] A44B *19/26*

U.S. Cl. 24—415 **12 Claims**



1. A slide fastener slider adapted for being reciprocally movable along two rows of interlocking fastener elements mounted on the inner longitudinal edges of a pair of stringer tapes of a slide fastener, the slider comprising a pair of upper and lower wings joined integrally together at its front end by a diamond; a pair of guide flanges provided between the upper and lower wings and converged towards the rear end of the slider to thus define with the diamond a Y-shaped guide channel for running of the fastener element rows therethrough, the upper wing having a pair of lateral extensions one provided beyond the outer side of each flange; and a pair of guide rollers rotatably mounted one on each extension and disposed one on each side of the junction portion of the Y-shaped guide channel for rolling engagement with the fastener element rows, the lower wing being slightly less in width than the Y-shaped guide channel at least adjacent the junction portion of the Y-shaped guide channel so that there remain open spaces below the guide rollers.

5,081,748

HOOK AND LOOP FASTENER, FLEXIBLE BAND CONTAINING SUCH HOOK AND LOOP FASTENER AND METHOD OF USING SUCH FLEXIBLE BAND

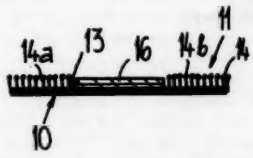
Jürg Eberle, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Continuation of Ser. No. 251,794, Oct. 3, 1988, abandoned. This application Sep. 17, 1990, Ser. No. 585,033

Claims priority, application Switzerland, Oct. 6, 1987, 3897/87

Int. Cl.[5] A44B *17/00*

U.S. Cl. 24—442 **10 Claims**



1. A releasable fastening device comprising

an elongate flexible band defining lengthwise and width directions, and having opposite ends and opposite sides,

a first fastener pile mounted to cover a predetermined area on one of said sides of said band, and a second fastener pile mounted to cover a predetermined area on the opposite of said sides of said band, with said first and second fastener piles each having a predetermined height and being con-

figured to provide a separable interconnection when pressed together,

first and second compression resistant spacer means respectively, mounted adjacent said first and second fastener piles, with each of said spacer means having a substantially identical cross-sectional shape and comprising a substantially flat outwardly facing abutting surface which has a height which is not substantially less than and not greater than said predetermined height of the associated fastener pile, and with the area of said abutting surface of each of said spacer means comprising at least a substantial portion of said predetermined area of the associated fastener pile, said first and second spacer means being positioned such that said abutting surfaces overlie and abut each other when said fastener piles are operatively pressed together, and such that said abutting surfaces act to protect said fastener piles from being subjected to excessive compression loads.

5,081,749

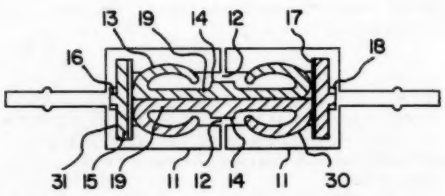
CONCEALED PORTABLE DISPLAY DEVICE FASTENER

Jack R. Brady, 910 N. Brooklyn Rd., Monroe, Utah 84754

Filed Mar. 15, 1991, Ser. No. 670,315

Int. Cl.[5] A44B *17/00*

U.S. Cl. 24—577 **20 Claims**



1. A concealed portable display device fastener permanently attached to device components comprising:

A. An elongate channel having a barb web attachment means at one end, an open end keyway including a round depression interlocking means at opposite end.

B. A clip having a plurality of flexible semi circular open edge tube of equal length interlocking means attached to a fillet of same length at one end, a rectangular plate interlocking means of same length fastened perpendicular at longitudinal center forming a T shape at opposite end, outside face of said plate having a cube boss interlocking means with dimensions of sides equal to depth of a slot flexion means in said plate, said slot flexion means located at center of said plate, said boss interlocking means with said depression in said channel preventing longitudinal movement of said clip, said clip hereby inserted in top of channel by interlocking means becomes permanently attached to said channel creating a single fastener, said fastener attaches to display devices via said barb web connection means; a pair of fasteners coupling means occurs as said tube flexion means permits said tubes to conform to contour of said keyway interlocking means accomplishing tight rigid connection means.

5,081,750

GRIPPER CARRIAGE AND TRANSPORT ASSEMBLY FOR A STRETCHING FRAME

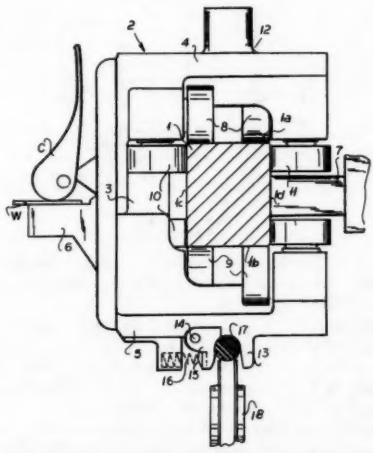
Udo Mölz, Wiehl-Bielstein, Fed. Rep. of Germany, assignor to Kampf GmbH & Co. Maschinenfabrik, Mühlen, Fed. Rep. of Germany

Filed Aug. 28, 1990, Ser. No. 574,262

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1989, 3928454

Int. Cl.[5] D06C *3/02*

U.S. Cl. 26—89 **15 Claims**



1. A traveling-clamp carriage assembly for a web-stretching frame, comprising:

a generally rectangular guide rail defining one side of said web-stretching frame and lying in a plane generally parallel to a stretching plane of a web of material to be stretched, said guide rail having a first pair of opposite running surfaces generally parallel to said planes and a second pair of opposite running surfaces generally perpendicular to said planes;

a traveling-clamp carriage displaceable along said rail in a travel direction to stretch said web, said carriage comprising:

a substantially U-shaped frame having respective shanks straddling said guide rail and disposed respectively above and below said guide rail, and a connecting member bridging said shanks,

means on said connecting member operable to grip said web,

a respective first pair of guide rollers on each shank rollingly engaging a respective surface of said first pair of opposite running surfaces, said first guide rollers of one of said shanks being offset in said direction relative to said first guide rollers of said other of said shanks,

a respective second pair of guide rollers on each shank rollingly engaging a respective surface of said second pair of opposite running surfaces, said second guide rollers of said one of said shanks being offset in said direction relative to said second guide rollers of said other of said shanks, and

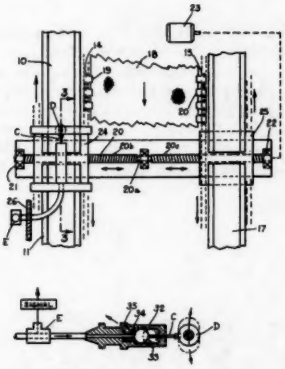
respective coupling means disposed substantially centrally between the surfaces of said second pair on each of said shanks for entrainment of said carriage along said guide rail; and

a transport device displaceable in said direction and engageable with one of said coupling means for entraining said carriage in said direction.

5,081,751
APPARATUS FOR LIMITING THE MOVEMENT OF TENTER FRAME RAILS

Thomas G. Pettigrew, Greenville, S.C., assignor to Marshall and Williams Company, Providence, R.I.

Filed Aug. 31, 1990, Ser. No. 575,851
Int. Cl.[5] D06C *3/02*
U.S. Cl. 26—91 **3 Claims**



1. Apparatus for limiting the transverse movement of tenter frame rails having a transverse power driven adjusting device at each junction between rails in end to end relation comprising:

a pair of opposed brackets carried by respective ends of said rails;

a valve having a spring biased plunger carried by one of said brackets;

a member having a predetermined surface area opposite said plunger in contact therewith maintaining same in closed position against the action of said spring so long as the plunger is in contact with said surface; and

a switch actuated by a flow of fluid flowing through said valve when said plunger is released by said surface, stopping said power driven adjusting device and transverse movement of said tenter frame rails.

5,081,752
INSTALLATION FOR PRODUCING FLAT TEXTILE BODIES

Ruedi Reinhard, Weggis, and Michael Dorn, Frick, both of Switzerland, assignors to Texilma AG, Hergiswil, Switzerland

PCT No. PCT/CH89/00175, § 371 Date Jul. 19, 1990, § 102(e) Date Jul. 19, 1990, PCT Pub. No. WO90/04062, PCT Pub. Date Apr. 19, 1990
PCT Filed Sep. 28, 1989, Ser. No. 499,371
Claims priority, application Switzerland, Oct. 4, 1988, 370/88-5
Int. Cl.[5] D04H *11/00*
U.S. Cl. 28—140 **15 Claims**

1. An installation for producing textile flat bodies comprising

a) a weaving or knitting machine for manufacturing a band having at least one edge section and floating web threads;

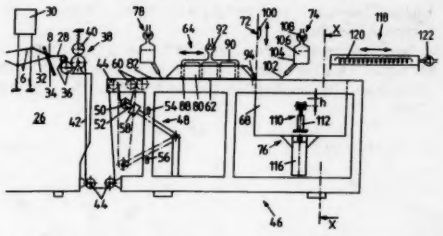
b) a stacking apparatus directly following the weaving or knitting machine having

a magazine with one or more compartments for receiving a packet of band segments arranged in stacked relationship;

a severing mechanism for cutting the band segments from the band;

a transfer device for delivering the band or the band segments to the compartment of the magazine; and

c) a tension device for maintaining nearly uniform band tension from the weaving or knitting machine to the magazine whereby the band tension in the packeting apparatus

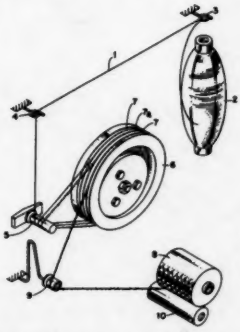


has a value equal to at least a fraction of the band tension in the weaving or knitting machine.

5,081,753
APPARATUS FOR PRODUCING STAPLE-LIKE YARN FROM CONTINUOUS FILAMENT YARN

Roger H. Fink, and Robert N. Armstrong, both of Asheville, N.C., assignors to BASF Corporation, Parsippany, N.J.

Filed May 31, 1990, Ser. No. 532,472
Int. Cl.[5] D02J *3/02*
U.S. Cl. 28—219 **12 Claims**



1. In a process for converting a continuous multifilamentary yarn into a staple-like yarn by continuously conveying continuous multifilamentary yarn onto a rotatable wheel having a peripheral yarn receiving groove and one or more radially disposed needles, the one or more radially disposed needles within the wheel, in registry with the groove, and in various stages of retraction and extension depending upon the relative rotational position of the wheel, the improvement comprising:

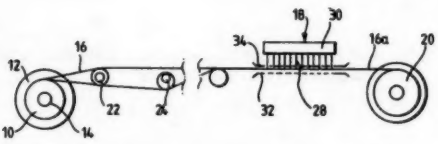
laterally contacting in the groove the one or more radially disposed needles with said multifilamentary yarn, the one or more radially disposed needles, having barbs and the barbs catching and breaking a fraction of the filaments and restraining said yarn against upward movement in its grooved path.

5,081,754

PRODUCTION OF SHAPED FILAMENTARY STRUCTURES

Peter G. Lawton, Halifax, and Norman Smith, Rugby, both of England, assignors to Aerospace Preforms Limited, Halifax, United Kingdom

Continuation-in-part of Ser. No. 6,899, Jan. 27, 1987, Pat. No. 4,955,123. This application Aug. 31, 1990, Ser. No. 576,678
Claims priority, application United Kingdom, Jan. 28, 1986, 8602003
Int. Cl.[5] B23P *17/00*
U.S. Cl. 29—419.1 14 Claims



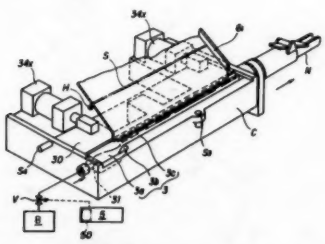
1. A method of manufacturing a shaped fibrous fabric structure from multiple layers of fibrous material comprising the steps of: providing a stack of layers of fibrous material one layer on top of another; needling the layers during the build up of the stack and increasing the distance between the bottom of the stack and the bottom of the needle stroke as the stack is being built up, and continuing the needling during a final needling step after the final layer of material is added to the stack without varying the distance between the bottom of the stack and the bottom of the needle stroke.

5,081,755

METHOD AND AN APPARATUS FOR INSERTING A SPOKE INTO A SPOKE HOLE OF A FLANGE OF A HUB

Toshiharu Hishikawa, Nara, Japan, assignor to Araya Industrial Co., Ltd., Osaka, Japan

Filed Oct. 22, 1990, Ser. No. 600,845
Claims priority, application Japan, Oct. 20, 1989, 1-274452
Int. Cl.[5] B21K *1/34*
U.S. Cl. 29—894.33 8 Claims



1. A method for inserting a spoke having a head and an elongated section with a pointed end into a spoke hole in a flange of a hub from a spoke ejection device arranged to face the spoke hole; comprising:
receiving and holding the spoke in a spoke holding chamber arranged so that an exit therefrom faces the spoke hole;
ejecting the pointed end of said spoke, into the spoke hole of the hub flange from the nozzle by air under pressure blown out from a substantially sealed spoke holding chamber.

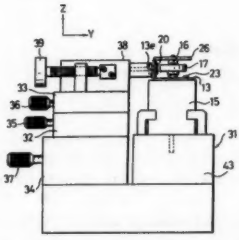
3. An apparatus for inserting a spoke having a head and an elongated section with a pointed end into a spoke hole in a flange of a hub from a spoke ejection device; comprising,
a nozzle for ejecting the spoke;
a holder providing a groove for receiving the spoke;
a groove cover for opening and shutting the groove;
a groove cover driving device for opening the groove cover when the spoke is being received and shutting the cover when the spoke is to be ejected;
an air outlet for blowing air under pressure into an end of said groove holding the head of said spoke; and
an air pressure control device for blowing air under pressure from said air outlet into said groove when the groove cover is shut.

5,081,756

METHODS FOR ASSEMBLING AND ADJUSTING A MAGNETIC ENCODER DEVICE

Hiraku Abe, Miyagi; Hidemasa Suzuki, Furukawa; Ichiro Tokunaga, Furukawa, and Yasuaki Ogawa, Furukawa, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 332,640, Mar. 31, 1989, Pat. No. 4,959,574. This application Jun. 7, 1990, Ser. No. 534,788
Claims priority, application Japan, May 28, 1988, 63-129461
Int. Cl.[5] H01F *7/06*
U.S. Cl. 29—593 7 Claims



1. A method for assembling and adjusting a magnetic encoder, comprising the steps of:
fixing a magnetic sensor capable of sensing a magnetic pattern carried by a magnetic scale to a first surface of a sensor retainer;
affixing an attracting jig to a second surface of said sensor retainer;
moving said jig to vary a width of a gap between said magnetic scale and said magnetic sensor until said width reaches a predetermined optimal value at a mounting reference position;
affixing said sensor retainer to a supporting member when said width reaches said mounting reference position; and
releasing said sensor retainer at said mounting reference position from said attracting jig.

5,081,757

ELECTRICAL INSULATING OIL COMPOSITION AND CAPACITORS PREPARED THEREWITH

Atsushi Sato, Tokyo; Shigenobu Kawakami, Chiba; Keiji Endo, and Hideyuki Dohi, both of Kanagawa, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 93,803, Sep. 4, 1987, Pat. No. 5,015,793. This application May 8, 1991, Ser. No. 697,197
Claims priority, application Japan, Sep. 4, 1986, 61-208540
Int. Cl.[5] H01G *4/22*; H01B *3/22*
U.S. Cl. 29—25.41 10 Claims

1. In a method of preparing an electrical capacitor including the steps comprising:
(i) rolling a metal foil electrode together with a dielectric material in layers to provide capacitor elements,
(ii) disposing said elements in a container and
(iii) impregnating said elements with an electrical insulating oil which can be used at temperatures as low as −40° C., the improvement which comprises:
employing as said electrical insulating oil an oil composition comprising at least 4 members selected from the group consisting of the following 7 components:
(a) m-ethylbiphenyl,

(b) p-ethylbiphenyl,
(c) o-benzyltoluene,
(d) m-benzyltoluene,
(e) p-benzyltoluene,
(f) 1,1-diphenylethane, and
(g) 1,1-diphenylethylene,

and said oil composition being characterized in that the proportion of solid phase at a temperature of −40° C. of said electrical insulating oil is nor more than 45% by weight and the proportion of the total quantity of solid phase is calculated according to the following general equation of solid-liquid equilibrium:

$$X_i = \exp\left[\frac{\Delta Hf}{R}\left(\frac{1}{Tf} - \frac{1}{T}\right)\right]$$

wherein
X_1 is the equilibrium mole fraction of a component i of said 7 components in the liquid phase of said composition,
Hf is the heat of fusion (cal.mol^{-1}) of said component i as a pure substance,
Tf if is the melting point (K) of said component i as a pure substance,
T is the temperature (K) of the system, and
R is the gas constant (cal.mol−1.K^{-1}).

5,081,758

ELECTRICAL INSULATING OIL COMPOSITION AND CAPACITORS PREPARED THEREWITH

Atsushi Sato, Tokyo; Shigenobu Kawakami, Chiba, and Keiji Endo, Kanagawa, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 93,813, Sep. 4, 1987, Pat. No. 5,017,733. This application May 8, 1991, Ser. No. 697,198
Claims priority, application Japan, Sep. 4, 1986, 61-208541
Int. Cl.[5] H01G *4/22*; H01B *3/22*
U.S. Cl. 29—25.41 **10 Claims**

1. In a method of preparing an electrical capacitor including the steps comprising:
(i) rolling a metal foil electrode together with a dielectric material in layers to provide capacitor elements,
(ii) disposing said elements in a container and
(iii) impregnating said elements with an electrical insulating oil which can be used at temperatures as low as −40° C., the improvement which comprises:
employing as said electrical insulating oil an oil composition comprising 45% by weight or more of at least 2 members selected from the group consisting of the following 6 components and the remainder of non-condensed bicyclic aromatic hydrocarbons having not more than 17 carbon atoms except said 6 components:
(a) m-ethylbiphenyl,
(b) p-ethylbiphenyl,
(c) o-benzyltoluene,
(d) m-benzyltoluene,
(e) p-benzyltoluene, and
(f) 1,1-diphenylethane and is characterized in that, when the temperature of said composition is −40° C.,
(I) the total quantity of solid phase obtained by calculating according to the following solid-liquid equilibrium equation is 45% by weight or less relative to the total quantity of said composition, and
(II) in the liquid phase composition calculated by the following solid-liquid equilibrium equation, the total quantity of said compounds (a) to (f) is 40% by weight or more and the viscosity of this liquid phase is 500 cSt or lower,

$$X_i = \exp\left[\frac{\Delta Hf}{R}\left(\frac{1}{Tf} - \frac{1}{T}\right)\right]$$

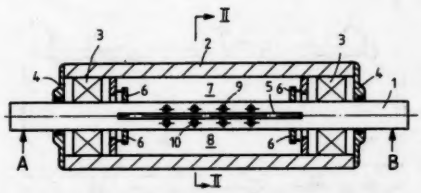
wherein
X_i is the equilibrium mole fraction of a component i in the liquid phase of said composition,
ΔHf_i is the heat of fusion (cal.mol^{-1}) of said component i as a pure substance,
Tf_i is the melting point (K) of said component i as a pure substance,
T is the temperature (K) of the system, and
R is the gas constant (cal.mol^{-1}.K^{-1})

5,081,759

VIBRATION DAMPING IN A ROLL

Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J.M. Voith GmbH, Fed. Rep. of Germany

PCT No. PCT/EP87/00578, § 371 Date Mar. 5, 1989, § 102(e) Date Mar. 5, 1989, PCT Pub. No. WO88/03610, PCT Pub. Date May 19, 1988
Continuation of Ser. No. 563,934, Aug. 6, 1990, abandoned, which is a continuation of Ser. No. 350,551, Mar. 5, 1989, abandoned. This PCT application Oct. 7, 1987, Ser. No. 635,395
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1986, 3638070
Int. Cl.[5] B21B *13/02*
U.S. Cl. 29—116.1 **17 Claims**



1. A vibration-damped roll for machines used to produce or process paper-, cardboard-, or textile-webs comprising:
a stationary central axis;
a roll-shell rotating about the center axis;
a first chamber, located within the roll shell, the first chamber being defined at least in part by a semiconductor space substantially surrounding the central axis and being filled with a fluid adapted to transfer a a hydraulic supporting force from the central axis to the roll-shell; the first chamber being connected, through at least one constricted line, to a second chamber also located within the roll shell; and
gas-containing resilient means preventing the second chamber from being completely filled with fluid so that, in the event of changes in pressure in the first chamber, the amount of fluid in the second chamber varies in response to such pressure changes in the first chamber, whereby the constricted line, the gas-containing resilient means, and the second chamber are means for counteracting any vibration of the roll-shell.

5,081,760

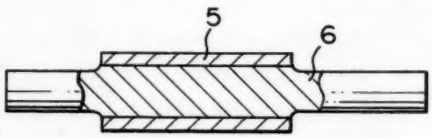
WORK ROLL FOR METAL ROLLING

Takashi Kikuhara; Osamu Shitamura, and Yasuo Kondo, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 20, 1990, Ser. No. 541,012
Claims priority, application Japan, Jun. 26, 1989, 1-160783; Aug. 31, 1989, 1-223297
Int. Cl.[5] C21D *1/48*
U.S. Cl. 29—130 **9 Claims**

1. A work roll for a metal rolling mill comprising a core

shaft of a low alloy steel, and an outer layer covering an outer surface of said core shaft, wherein said outer layer is of a high alloy steel consisting, by weight percent, essentially of C 0.5 to 1.5%, Si 0.5 to 3.0%, Mn 1.5% or less, Cr 2 to 7%, Mo 1 to 5%, V 0.5 to 2.0%, W up to 2.0% and a balance Fe except for



impurities; and wherein at least an outer surface portion of the outer layer is quenched and tempered and consists essentially of a martensitic structure including 15% by volume or less of residual austenite, and wherein a residual compression stress exists in the outer surface portion of said outer layer, with said outer layer having a high surface hardness.

5,081,761

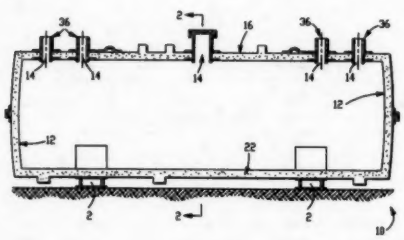
DOUBLE WALL STEEL TANK

Ronald K. Rinehart, 175 Silberhorn Dr., Folsom, Calif. 95630, and Chris Johnson, P.O. Box 4927, Arcata, Calif. 95521

Continuation-in-part of Ser. No. 510,018, Apr. 17, 1990, abandoned. This application Dec. 12, 1990, Ser. No. 628,645

Int. Cl.[5] B21D *39/03*

U.S. Cl. 29—428 **12 Claims**



1. A method for manufacturing a double wall tank of the type for storing liquids and having an exterior tank, a smaller inner tank concentrically nested within the exterior tank, there being a space defined between the exterior tank and the inner tank occupied by a cured cementitious insulating material, the method comprising the steps of:

forming a generally cylindrical inner steel tank having a predetermined outside diameter and at least one inner port for filling and emptying a dangerous liquid to and from the interior storage space of the inner tank;

forming a generally cylindrical exterior steel tank having an inside diameter selected to be larger than the predetermined outside diameter of the inner steel tank and having at least one outer port for filling and emptying the storage space, the outer port being in alignment with the inner port when the double wall tank construction is completed, the exterior steel tank being formed with one end closure thereof being freely detachable from a cylindrical body thereof, and with another end closure being attached to the cylindrical body;

attaching spacers at spaced apart locations about the exterior of the inner steel tank, the spacers having a thickness dimension slightly less than one half the difference in outside diameter of the inner tank and inside diameter of the outer tank;

aligning the exterior tank in a vertically upright orientation with the detachable closure end being at the top and with the end closure removed;

positioning the inner tank in vertical orientation above the exterior tank and dropping the inner tank downwardly into the exterior tank and orienting the inner tank circumferentially relative to the exterior tank until the inner tank is nested within the exterior tank at a nesting position as controlled by the spacers to be substantially concentric with the exterior tank, and with the inner port aligned with the outer port;

attaching conduit means between the inner port and the outer port;

enclosing the open end of the exterior tank with the closure end therefor;

emplacing a cementitious, curable insulating material

formed between the inner and the exterior tanks not occupied by the spacers;

curing the cementitious material;

draining any excess moisture from the cured cementitious material;

enclosing the space having the cured cementitious material to complete construction of the double wall tank construction.

5,081,762

TOOL EXCHANGE DEVICE FOR A MACHINE TOOL

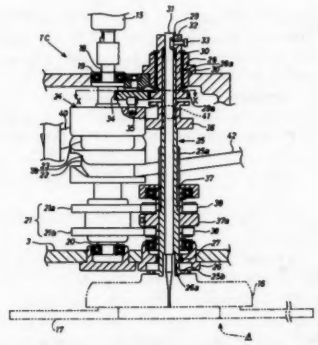
Narihiko Kin, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 4, 1990, Ser. No. 577,333

Claims priority, application Japan, Sep. 1, 1989, 1-227867; Sep. 1, 1989, 1-227868

Int. Cl.[5] B23Q *3/157*

U.S. Cl. 29—568 **36 Claims**



1. A tool exchange device for a machine tool having a spindle head, a spindle mounted on the spindle head such that the spindle rotates about a spindle axis, and a tool for machining a work piece detachably mounted on the spindle, the tool exchange device comprising:

a central shaft mounted on the spindle head such that the central shaft is rotatable about a tool exchange axis, where the tool exchange axis is parallel to the spindle axis;

a hollow shaft coaxially mounted around the central shaft, where the hollow shaft is movable along and rotatable about the tool exchange axis relative to the central shaft;

a drive shaft mounted on the spindle head adjacent to the tool exchange axis such that the drive shaft is rotatable about a drive axis, where the drive axis is parallel to the tool exchange axis;

tool storing means for storing a next desired tool.

tool exchange means attached to the hollow shaft, the tool exchange means comprising first and second grasping means mounted on a tool exchange arm for grasping the tool in the spindle and the next desired tool according to the rotation of the central shaft, spring means acting on each of the grasping means to force each of the grasping

means into a closed, grasping orientation, and opening means acting between the tool exchange arm and the grasping means to force each of the grasping means into an open, non-grasping orientation against the force of the spring means;

removal means mounted on the drive shaft for lowering the hollow shaft to remove the tool from the spindle and raising the hollow shaft to insert the tool into the spindle;

release means mounted on the drive shaft for releasing the tool from the spindle;

rotation means mounted on the drive shaft for rotating the central shaft to operate the grasping means of the tool exchange means; and

exchange means mounted on the drive shaft for rotating the hollow shaft and tool exchange means about the tool exchange axis to exchange the next desired tool for the tool into the spindle.

5,081,763

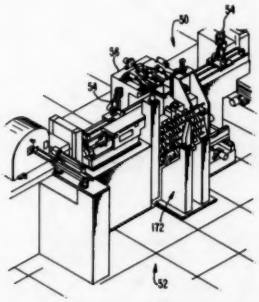
AUTOMATED DRILLING STATION

Everett E. Jones, Wichita, Kans., assignor to The Boeing Company, Seattle, Wash.

Filed May 30, 1989, Ser. No. 358,429

Int. Cl.[5] B23Q *3/157*

U.S. Cl. 29—568 **31 Claims**



1. An automated drilling station for use in a computer controlled manufacturing system, said drilling station comprising:

means adjustably defining a planar work position having a central reference point for releasably clamping a planar work piece in said work position;

a chuck assembly adapted to operatively receive a selected drill bit;

means for selectively moving said chuck assembly on an axis perpendicular to the plane of said work position;

means for storing a plurality of drill bits of various predetermined sizes;

means operable independently of said chuck assembly for transferring said selected drill bit between said storing means and said chuck assembly at a transfer station remote from said work position;

means for selectively translating said chuck assembly between said transfer station and said work position and between locations on one side of said work piece aligned with predetermined drilling locations in said work position; and

means for selectively disposing a bushing having a size corresponding to said selected drill bit on the other side of said work piece aligned with said predetermined drilling drill locations in opposed relation to said chuck assembly.

5,081,764

TERMINAL STRUCTURE AND PROCESS OF FABRICATING THE SAME

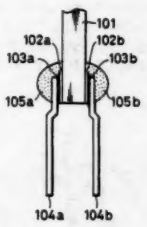
Jiro Utunomiya; Saburo Iida; Hitosi Sibuya; Kazunori Kusaba, and Isao Narumi, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 486,611, Feb. 28, 1990, Pat. No. 4,989,318, which is a division of Ser. No. 361,658, Jun. 2, 1989, Pat. No. 4,985,747. This application Jul. 26, 1990, Ser. No. 563,320

Claims priority, application Japan, Jun. 9, 1988, 63-140552; Jun. 9, 1988, 63-140553

Int. Cl.[5] H01R *9/09*

U.S. Cl. 29—843 **17 Claims**



13. In a process for forming an electronic component module having a substrate and a wiring pattern on at least one surface of the substrate, the process including mounting an electronic component on the substrate in electrical contact with the wiring pattern and providing a terminal in contact with only one surface of the substrate, the improvement comprising the steps of:

electrically and fixedly connecting together a part of the wiring pattern on the one surface and a part of the terminal;

applying thixotropic resin only on and in an immediate vicinity of the respective parts of the terminal and the wiring pattern; and

hardening the resin to reinforce the mechanical connection of the wiring pattern and the terminal.

5,081,765

METHODS FOR REPAIR OF TURBINE BLADES

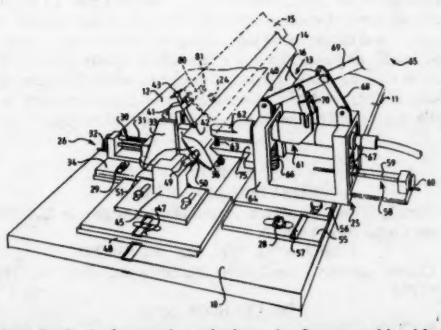
Michael J. Fraser, and Philip C. Franklan, both of Droitwich, England, assignors to Refurbished Turbine Components Limited, Droitwich, United Kingdom

Filed Dec. 26, 1990, Ser. No. 633,996

Claims priority, application United Kingdom, Jan. 10, 1990, 9000580

Int. Cl.[5] B23P *19/02*

U.S. Cl. 29—889.1 **6 Claims**



1. A method of removing a lacing wire from a turbine blade comprising severing the lacing wire between adjacent blades at

a position proximate to the blade from which the lacing wire is to be removed, moving a machining apparatus in a first direction towards the lacing wire and continuing said movement to cause removal of a part of the lacing wire and subsequently moving said machining apparatus in a second direction in an axis substantially coaxial with the lacing wire axis and continuing said movement until said lacing wire is removed.

5,081,766

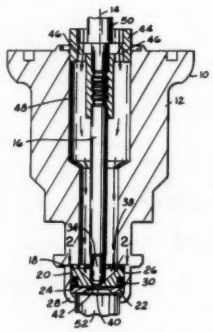
METHOD OF MAKING AN ELECTRICALLY-OPERATED FLUID VALVE HAVING IMPROVED SEALING OF THE VALVE NEEDLE TO THE VALVE SEAT WHEN THE VALVE IS CLOSED

James A. Kellum, Jr., Seaford; Robert Lehman, and James Parish, both of Newport News, all of Va., assignors to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Oct. 11, 1990, Ser. No. 596,166

Int. Cl.[5] B21D *53/00*

U.S. Cl. 29—890.13 **7 Claims**



1. A method of making an electrically-operated, spring-biased fluid valve so as to reduce fluid leakage through the valve when the valve is in use and being operated closed, said valve being of the type which comprises for its movable valve element, an elongate metal needle that has a rounded distal end and that is susceptible to bending and/or buckling under axial compression loads exceeding permissible axial compression loading, and for its valve seat element, a metal disc annulus having a frusto-conical wall that circumscribes a through-hole and is coaxial with said needle, said fluid valve operating in response to electrical energization and de-energization thereof to open and close said through-hole by unseating and seating said rounded distal end of said needle from and on said frusto-conical wall, said method comprising disposing said needle and said annulus, free of the valve's electrical operation and spring bias, axially between a pair of aligned elements that are relatively movable toward and away from each other along the direction of said axis, relatively moving said pair of aligned elements toward each other to axially clamp said needle and annulus, and causing said pair of aligned elements to deliver to said needle and said annulus a controlled clamping force that acts to coin an annular zone of surface contact between said rounded distal end of said needle and said frusto-conical wall without irreversibly bending or buckling said needle.

5,081,767

SHAVING APPARATUS

Willem S. Wijma, Drachten, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

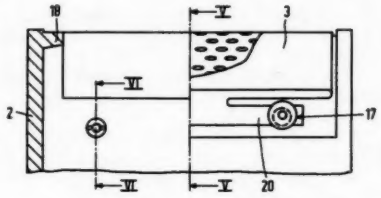
Filed Jun. 12, 1990, Ser. No. 536,903

Claims priority, application Netherlands, Jul. 10, 1989, 8901754

Int. Cl.[5] B26B *19/02*

U.S. Cl. 30—43.92 **3 Claims**

1. A shaving apparatus comprising a foil having hair entrance apertures and a shaving member which can be driven with respect to the foil, which apparatus comprises a foil holder having supporting members corresponding to the shape of the foil, the foil holder comprising at least one adjustable connection member for the foil and wherein the foil can be put



under pressure against the supporting parts of the holder by means of the adjustable connection member, the adjustable connection member being formed by a rotatable cam having an eccentric part which is situated in a corresponding aperture of the foil.

5,081,768

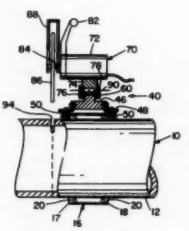
PIPE CUTTING

Matthew T. Brennan, Wayland, and James A. Moruzzi, Millis, both of Mass., assignors to SMA Controls, Inc., Medfield, Mass.

Filed Jan. 22, 1991, Ser. No. 644,094

Int. Cl.[5] B26D *3/16;* **B23D** *21/00, 21/04*

U.S. Cl. 30—101 **20 Claims**



1. A pipe cutting system comprising

annular pipe encircling track structure, said track structure including a flexible strip member with two parallel edges for encircling the pipe to be cut, structure for securing said strip member in pipe encircling configuration, and structure for spacing the edge surfaces of said strip member from the outer surface of said pipe;

a carriage assembly including two pairs of spaced guide structures for engaging the edges of said strip member in guiding relationship such that each said guide structure is disposed generally perpendicular to a tangent to the track strip at the point of engagement of said guide structures for movement of said carriage assembly along said track structure completely around the pipe; and

a cutting tool assembly for mounting on said carriage assembly, said cutting tool assembly including a drive motor, a drive shaft coupled to said drive motor and a cutter disc mounted on said drive shaft for rotation about a drive axis extending generally perpendicular to the axis of said pipe, and structure for coupling said cutting tool assembly to said carriage assembly to allow movement of said cutting tool assembly relative to said pipe so that said cutting tool assembly may be moved to place said cutter disc in cutting relation with the pipe and said cutting tool assembly and said carriage assembly may be concurrently moved along

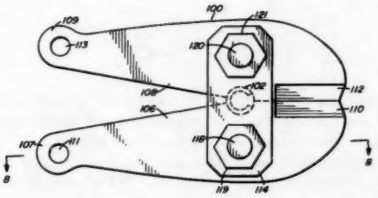
said track strip around said pipe to cut through the annular wall of said pipe.

5,081,769

CUTTER HEAD WITH FLEXIBLE STABILIZER

Karel B. F. Jurcs, Statesboro, Ga., assignor to Cooper-Industries, Inc., Houston, Tex.

Filed Nov. 20, 1989, Ser. No. 439,593
Int. Cl.[5] B26B *13/00*
U.S. Cl. 30—261 13 Claims



1. A cutting head assembly including two jaws, a cutting blade on each jaw, and a pivot point between the jaws, the improvement comprising:

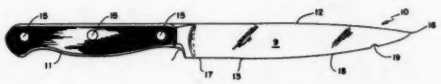
a spring positioned between the jaws and extending around the pivot point; said spring being rigid in a direction parallel to the axis of rotation about the pivot point and engaging each of the jaws, said spring exerting an outward pivoting force on the jaws about the axis of the pivot point toward an open position and resisting the movement of the jaws in a plane other than the pivot plane.

5,081,770

TOMATO KNIFE

Frederick Fierthaler, Perch Pond Rd., R.D. #1, Box 133, Nineveh, N.Y. 13813

Filed Jul. 25, 1989, Ser. No. 384,362
Int. Cl.[5] B26B *9/02*
U.S. Cl. 30—355 20 Claims



1. A knife for particular use with fruit such as a tomato, wherein an outer rind or skin of the fruit is easily broken and cut without substantially tearing the delicate inner pulp thereof, said knife comprising:

a cutting blade having a straight cutting edge for at least approximately fifty percent of its cutting edge surface and having a convexly curved cutting edge surface thereafter, terminating in a sharp profile with respect to a back edge surface;

means defining a tang disposed on a distal end of said cutting blade for attachment to a blade handle;

a blade handle attached to said tang; and

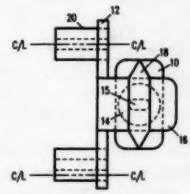
means defining a single, small arcuate notch disposed along said convexly curved cutting edge of said cutting blade approximately between one-half to one inch from said sharp point for piercing and cutting an outer rind or skin of a fruit without substantially tearing or otherwise damaging its inner pulp.

5,081,771

ALIGNMENT TOOL FOR MOUNTING DOOR LOCK ASSEMBLY

Donald B. McGregor, 3908 Caxton Ct., San Jose, Calif. 95130; Michael W. Davis, 1722 Whitwood La., Apt. #2, Campbell, Calif. 95008, and Russell J. Bernard, 2847 Regnart Way, Santa Clara, Calif. 95051

Filed May 24, 1991, Ser. No. 705,559
Int. Cl.[5] B25H *7/00;* G01B *3/14*
U.S. Cl. 33—667 10 Claims



1. An alignment tool for preparing a door with through holes used for mounting a lock assembly to the door, which has a cylinder bore extending from one face to the other face of the door and a mortise and plunger bore formed at the edge of the door comprising:

a support plate having spaced bushings defining guide holes for aligning said through holes at a precise distance apart;

an adjustable bracket for seating within said mortise; and

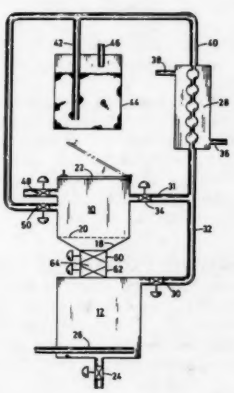
means connecting said bracket and said support plate for translating the centerline position of said bracket, relative to said mortise and plunger bore, to the centerline position of said support plate relative to said cylinder bore.

5,081,772

CONDENSATION VAPOR DEGREASER

Donald P. Wyman, Fairport, N.Y., assignor to Rochester Midland Corporation, Rochester, N.Y.

Filed May 17, 1990, Ser. No. 524,469
Int. Cl.[5] F26B *21/06*
U.S. Cl. 34—79 28 Claims



1. A condensation vapor degreaser comprising:

a solvent chamber for containing a supply of solvent;

a cleaning chamber for cleaning parts with vaporized solvent;

a heater for vaporizing solvent in the solvent chamber;

a door for inserting parts into said cleaning chamber and for removing parts from said cleaning chamber;

a condenser for condensing solvent vapors;

a first valve connecting said solvent chamber to said cleaning chamber;

a second valve connecting said solvent chamber to said condenser;

a third valve connecting said cleaning chamber to said condenser; and

valve operating means for closing said first and third valves and opening said second valve to isolate said cleaning chamber from solvent vapors and condensed solvent exchanged between said solvent chamber and said condenser.

5,081,773

OVEN FOR DRYING OR CURING A PHOTOSENSITIVE MATERIAL APPLIED AS A COATING ON A SUBSTRATE

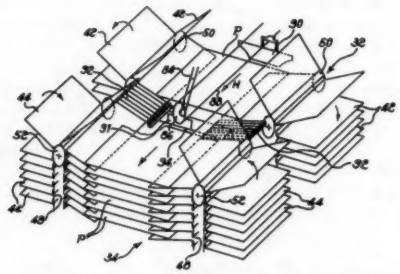
Ernesto Brusati, San Rocco Al Porto, and Alessandro Garioni, S. Colombano Al Lambro, both of Italy, assignors to Vibrosystem S.r.l., Milan, Italy

Filed Dec. 12, 1989, Ser. No. 448,846

Claims priority, application Italy, Dec. 14, 1988, 22942 A/88

Int. Cl.[5] F26B *25/00*

U.S. Cl. 34—205 **9 Claims**



1. An improved oven for drying or curing a photosensitive material applied by coating on a board comprising, within a support structure:

means for heating said board;

means for handling said board including at least one pair of vertically arranged operating units, a first unit transporting said board vertically upwards and a second unit transporting said board vertically downward to a discharge area; and

an independently operable transfer station for transferring said board from the first operating unit to the second operating unit;

wherein each of said operating units includes two sets of support shelves, each set of support shelves being carried by a pair of handling chains connected to driving means, on the support shelves opposite to each other along the rising and lowering stroke respectively, there being horizontally located boards to be processed.

5,081,774

COMPOSITE EXCAVATING TOOTH

Yukimitsu Kuwano, Niihama, Japan, assignor to Sumitomo Heavy Industries Foundry & Forging Co., Ltd., Ehime, Japan

Continuation of Ser. No. 315,091, Feb. 24, 1989, abandoned.

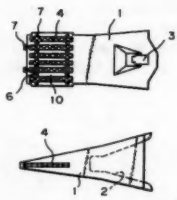
This application Apr. 10, 1990, Ser. No. 511,864

Claims Priority, application Japan, Dec. 27, 1988, 63-327757

Int. Cl.[5] E02F *9/28*

U.S. Cl. 137—142 R **8 Claims**

1. A replaceable composite excavating tooth for excavating earth, comprising: a cast metal tooth body and an insert comprised of an integral body formed of a wear-resistant Cr-cast iron material having a higher hardness than said cast metal tooth body, said cast metal tooth body solidifying on said Cr-cast iron insert and having top and bottom surfaces tapered toward a tip end thereof and two side surfaces, and said Cr-cast iron insert is located at a central portion between said top and bottom surfaces of said case metal tooth body, said insert having clearances between portions of said insert which are completely filled by the solidified cast metal of said tooth body, and a width substantially the same as the width between said side surfaces of said cast metal tooth body, said insert extending from said tip end toward an attachment part of said tooth, and terminating at a predetermined useable limit of said



composite excavating tooth, and said insert is rigidly and integrally bonded internally of said cast metal tooth body by a diffusion layer of materials from said cast metal tooth body and said insert between said insert and said cast metal tooth body which enhances adhesion between said insert and said cast metal tooth body and selectively imparts desired wear-resistant characteristics to said composite excavating tooth.

5,081,775

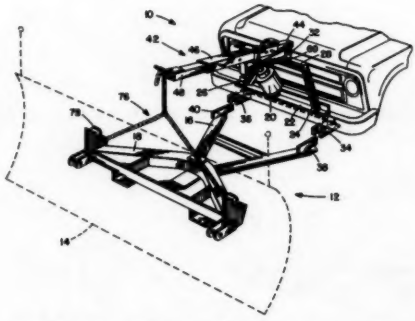
PLOW ATTACHING DEVICE AND METHOD

Leo Veilleux, 19 Main St., Danbury, Conn. 06810

Filed Jun. 18, 1990, Ser. No. 539,716

Int. Cl.[5] E01H *5/06*

U.S. Cl. 37—197 **3 Claims**



1. A device to facilitate coupling to plow assembly to the front end of a vehicle whereby the vehicle and the plow assembly have mating coupling means comprising:

a lift mechanism having an actuator means attached to a first arm; a second arm of three telescoping sections adapted to connect to the lift mechanism and extend forward of the vehicle;

hook means at the inner end of the second arm adapted to engage the lift mechanism;

notched projection means at the outer end of the said second arm;

U-shaped securing means secured around the said second arm and positioned adjacent the attachment of the actuator means and the first arm adapted to engage the lift mechanism to prevent lateral pivoting of the arm;

chain means adapted to connect to the said notched outer projection means and having two depending sections; and

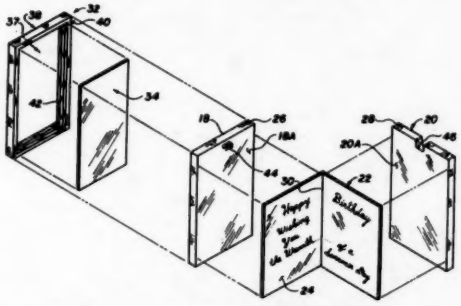
clamping means secured to the end of each depending chain section adapted to connect to corresponding locations on the plow assembly whereby the latter may be raised in a balanced manner to facilitate the coupling to the vehicle.

5,081,776

GREETING CARD STRUCTURE

Irving I. Stone, 27500 Cedar Rd., Beachwood, Ohio 44122, and Glenn T. Imhoff, 9829 Lake Ave. #206, Cleveland, Ohio 44102

Filed Jul. 24, 1990, Ser. No. 558,251
Int. Cl.[5] G09F 1/00
U.S. Cl. 40—124.1 12 Claims



1. A greeting card structure, comprising:

a pair of relatively rigid panels pivotal between open and closed positions;

each of said pair of panels having a respective inner surface and a respective outer surface;

a flexible sheet connected to and substantially covering the inner surfaces of each of said pair of panels, said flexible sheet having a portion extending between said pair of panels and forming a hinge for enabling said pair of relatively rigid panels to pivot relative to each other between said open and said closed positions;

said flexible sheet having an inner surface adapted to carry a social expression message which is displayed when said pair of panels are in said open position;

said pair of panels when in a partially open position being adapted to rest on edge on a surface to support said greeting card in a partially open position on the surface;

framed artwork connected with one of said pair of panels, said framed artwork comprising a painting supported by the outer surface of said one of said pair of panels and a frame extending about a border of said painting and connected with said one of said pair of panels, said frame extending away from the outer surface of said one of said pair of panels and the painting supported thereon in a direction transverse to the outer surface of said one of said pair of panels, said frame forming a central window through which said painting can be viewed; and

said pair of panels when in said closed position forming a wall support structure extending away from said inner surface of said one of said pair of panels, said wall support structure adapted to enable said framed artwork to be suspended from a wall when said pair of panels are in said closed position.

5,081,777

PICTURE FRAME

Byung-Woong Kim, Sungnam, Rep. of Korea, assignor to Bowon Trading Co., Ltd., Seoul, Rep. of Korea

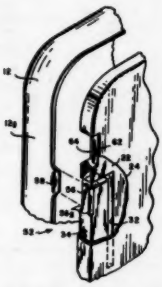
Filed Oct. 22, 1990, Ser. No. 601,893
Int. Cl.[5] A47G 1/06
U.S. Cl. 40—152 4 Claims

1. A picture frame comprising

an annular frame member defining a window and having a rearwardly extending peripheral imperforate flange with inner and outer surfaces;

a relatively rigid back panel whose outer edge has the same general outline as the frame member allowing said panel to seat snugly against the frame member within the frame member flange, each location around a perimeter of the frame member flange having a corresponding location around a perimeter of the back panel outer edge; and

locking means for releasably locking the back panel to the frame member, said locking means including at least one inwardly projecting detent in the inner surface of the frame member flange at a selected location around the perimeter of said flange, and at least one resilient cantilevered arm having one end connected integrally to said panel, said arm extending generally parallel to the panel outer edge and having a free end segment at said corresponding outer edge location arranged to resiliently engage in front of said detent when the back panel is seated against the frame member.

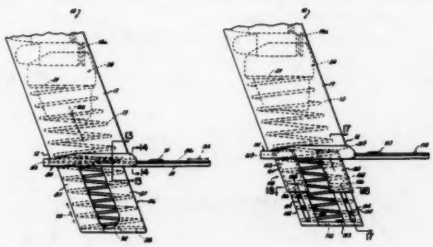


5,081,778

CARTRIDGE CLIP

Robert D. Switzer, 2200 N. Ft. Thomas Ave., Ft. Thomas, Ky. 41075

Division of Ser. No. 413,279, Nov. 9, 1989, Pat. No. 4,995,179.
This application Jun. 11, 1990, Ser. No. 535,787
Int. Cl.[5] F41A 9/25
U.S. Cl. 42—50 16 Claims



1. A cartridge clip comprising

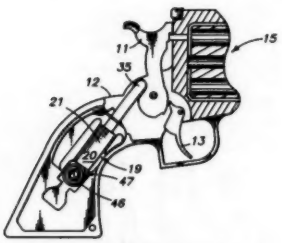
a magazine having an ejection end and a closed end,

a compression spring positioned within said magazine, cartridges that are loaded into said magazine being spring biased toward the ejection end of said magazine for subsequent ejection therefrom,

a spring seat within which one end of said compression spring is received, said spring seat being telescoped inside said magazine when said cartridge clip is in charged condition, and said spring seat being telescoped outside said magazine when said cartridge clip is in loading condition, said spring seat comprising

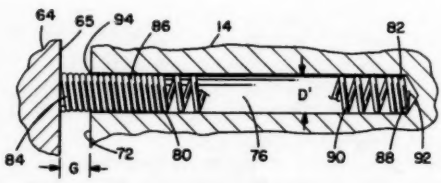
an upper spring seat section and a lower spring seat section, said upper and lower sections being telescopable relative one to the other, said upper spring seat section allowing said compression spring to pass therethrough and said lower spring seat section being adapted to support one end of said compression spring.

5,081,779
FIREARM SAFETY LOCK
Harold R. Pack, P.O. Box 926, Chewelah, Wash. 99109
Filed Jun. 11, 1991, Ser. No. 713,408
Int. Cl.[5] F41A *17/02*
U.S. Cl. 42—70.11 **16 Claims**



1. A firearm safety lock device, comprising:
a hammer spring situated along an axis;
a rigid housing enclosing the hammer spring and having a hammer pin receiving opening formed therein along the axis;
a plunger having a shaft axially received within the housing and connected to the hammer spring for movement along the axis in opposition to bias of the hammer spring;
a cam mounted to the rigid housing adjacent the spring and including (a) a recess movable to an unlock position to allow the plunger shaft to act against the hammer spring to deflect the hammer spring; and (b) a lock surface movable to a locking position in the housing to abut the plunger shaft and prevent motion thereof to deflect the hammer spring; and
lock means mounted to the housing and engaging the cam for selectively locking the cam in the locking position.

5,081,780
FIRING PIN POSITIONING SYSTEM
Bryant L. Lishness, Bristol, and Paul A. Scirica, East Hampton, both of Conn., assignors to Colt's Manufacturing Company Inc., West Hartford, Conn.
Filed Dec. 14, 1990, Ser. No. 627,595
Int. Cl.[5] F41A *19/00*
U.S. Cl. 42—69.01 **20 Claims**



1. A system for movably positioning a first member relative to a second member in a firearm, the system comprising:
a longitudinal hole in the first member of the firearm having an aperture thereinto; and
a positioner for positioning the second member at a predetermined position from said aperture while at rest, said positioner being comprised of a longitudinal coiled member with a first spring section having portions of said coiled member spaced from each other and a second section having portions of said coiled member located next to each other, said coiled member having a length greater than said hole and being located therein with said first section in said hole and said second section extending out of said hole at said aperture, wherein said positioner and hole are adapted to position the second member at a rest position, said positioner can be compressed into said hole, at least partially, when the second member is advanced towards said aperture and said positioner can return the second member to its rest position

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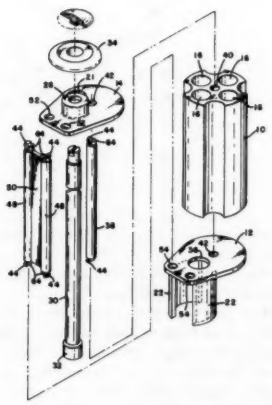
5,081,781
GUN LOADING DEVICE
Emil L. Kanyuck, 925 Pleasant Dr., York Haven, Pa. 17370, and Carl J. Winters, Jr., R.D. #6, Box 160, Red Lion, Pa. 17356
Filed Feb. 19, 1991, Ser. No. 657,664
Int. Cl.[5] F41C *27/00*
U.S. Cl. 42—90 **8 Claims**



1. A gun-loading device operable to charge a gun with powder and/or a bullet or ball and comprising in combination, a lower base member having socket means to position said device upon the muzzle of said gun and a discharge opening alignable with said socket, a storage member having a plurality of parallel bores adapted for each to receive respectively measured charges of powder and/or a bullet or ball, said storage member being rotatably mounted upon an axis perpendicular to said base member, an upper inlet member having an opening with which said bores of said storage member are alignable and through which powder and/or a bullet or ball are introduced respectively into said bores, a plunger perpendicular to said upper inlet member and parallel to the axis of said bores and operable to push charges of powder and/or bullets or balls from said bores and through said opening in said base member and into the muzzle of a gun when the muzzle thereof is disposed in said socket means, securing means extending between said base and inlet members and operable to maintain the same respectively adjacent opposite ends of said storage member, said securing means comprising a pair of relatively short rods of similar length extending between said base and inlet members in transversely-spaced manner to each other, and another one of such rods extending through a central bore in said storage member and comprising an axis around which said storage member is rotatable successively to disposed one of said bores in axial relationship with a discharge opening in said base for receiving a charge of powder and transmit it therethrough to the muzzle of a gun when said muzzle id disposed in said socket means in said base.

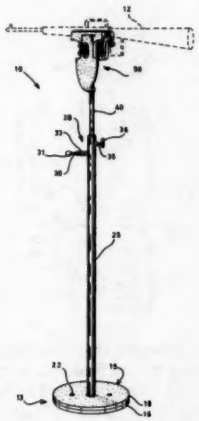
5,081,782
GUN STAND
Lloyd A. Wright, 4636 Robindale Rd., Knoxville, Tenn. 37921
Filed Aug. 20, 1990, Ser. No. 569,842
Int. Cl.[5] F41A *23/04, 23/52*
U.S. Cl. 42—94 **21 Claims**

1. An improved gun stand for securing a gun wherein said

gun stand is capable of absorbing recoil that results from firing said gun, wherein said gun stand comprises:

a base means for engaging a supporting surface for stabilizing and supporting said gun stand said base means including

an inertial mass means for absorbing said recoil, said base means thereby allowing said stand to rest on said support-



ing surface and alleviating the necessity of attaching said stand to said supporting surface;

support means having a lower end attached to said base means and at least one upper end; and

a gun clamping means attached to said at least one upper end of said support means whereby said gun clamping means secures said gun to said gun stand in a clamping fashion.

5,081,783

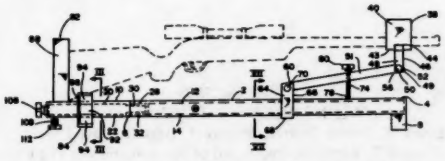
DEVICE FOR SUPPORTING AND SIGHTING A FIREARM

Robert N. Jarvis, P.O. Box 1503, Cortez, Colo. 81321

Filed Jun. 3, 1991, Ser. No. 709,614

Int. Cl.[5] F41A *23/00*

U.S. Cl. 42—94 **10 Claims**



1. A device for supporting and sighting a firearm having a barrel and a butt comprising:

an elongate base member having opposing forward and rearward ends;

a butt support member engaged at the rearward end of the base member;

butt receiving means mounted on the butt support member;

barrel support means mounted on the base member forward of its rearward end;

barrel receiving means disposed above the base member;

an elongate link pivoted at one of its ends to the barrel support means and at its other end to the barrel receiving means, to permit pivotal movement of the barrel receiving means relative to the base member between positions forward of the barrel support means to accommodate an elongate firearm and rearward of the barrel support means to accommodate a relatively short firearm; and

means carried by the link for adjusting the height of the barrel receiving means relative to the base member.

5,081,784

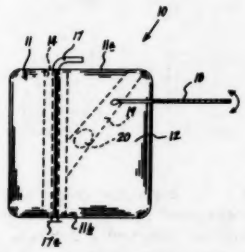
FISHING LURE RETRIEVAL APPARATUS

Nelo J. Santucci, deceased, late of Yuba City; John Lucich, and by Delores Lucich, executrix, both of 944 Sanborn Rd., Yuba City, all of Calif. 95993

Filed Feb. 26, 1990, Ser. No. 484,990

Int. Cl.[5] A01K *97/00*

U.S. Cl. 43—17.2 **2 Claims**



1. A fishing lure retrieval apparatus for securing and retrieving a fishing lure organization, wherein the apparatus comprises,

an elongate housing including an upper end wall, a lower end wall, a forward wall, and a rear wall, and

a through-extending first bore longitudinally directed through the housing and orthogonally aligned relative to the upper end wall and lower end wall, and

a slot diametrically aligned with the first bore for receiving and directing a fishing line secured to said fishing lure organization, wherein said slot is directed through said forward wall in communication with said first bore for receiving and directing a fishing line secured to said fishing lure organization through said slot to said first bore, and

a second bore including an upper opening directed through said housing and a lower end intersecting the first bore, wherein the second bore is angularly intersecting the first bore at an acute angle thereto, and

a lock means configured for movement along said second bore for engaging and locking the fishing lure organization when received within said first bore, and

wherein the lock means comprises a spherical lock ball, and the second bore is tapered from a narrowed upper end including said upper opening, wherein the upper opening defines a diameter less than that defined by said lock ball, and said lower end of said second bore defined as a diameter greater than said lock ball preventing said lock ball from exiting said housing through said upper opening, and

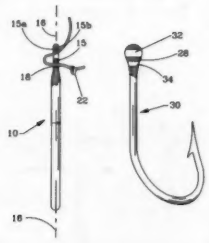
wherein said slot includes a further bore, said further bore directed through and aligned with said slot, wherein the bore further defines an axis positioned medially of said slot, and a lock pin slidably receivable within said slot to secure said fishing line within said first bore when directed through said slot, and

including a triangular clip including lower terminal ends pivotally mounted through said forward wall and said rear wall for securement of a retrieval line to said clip, and

wherein a first polymeric insert is securable within said first bore, said first insert includes a central sleeve defining an axial length equal to an axial length defined by said first bore, and said sleeve including a flared upper end and a flared lower end extending exteriorly of said upper end wall and said lower end wall respectively, and said sleeve further including an insert aperture aligned with the lower end of the second bore, and the sleeve further including an

elongate slot portion aligned with said slot, wherein said slot portion is offset relative to said insert aperture.

5,081,785
CONNECTOR FOR A FISHING DEVICE
Gredo W. Kahng, 1510 Spillers Ln., Houston, Tex. 77043
Filed Dec. 26, 1990, Ser. No. 634,040
Int. Cl.[5] A01K *91/03, 91/04*
U.S. Cl. 43—44.83 **1 Claim**

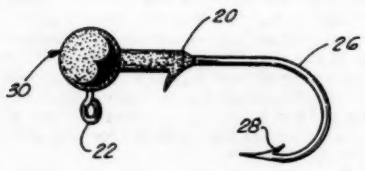


1. A fishing device connector system wherein the fishing device has an elongated rigid attachment portion disposed along a longitudinal axis, said attachment portion having spaced apart transverse openings disposed along said longitudinal axis with said openings being sized to receive a fishing line,

one of said openings having a papered wall surface with an entrance diameter portion sized to readily accept a smaller diameter fishing line and with an exit diameter portion sized only slightly larger than the diameter of the fishing line so that the fishing line is easily passed through said one opening from the larger entrance diameter portion to the smaller exit diameter portion and so that a knot can be tied in the fishing line at a location adjacent to said exit diameter portion to provide an obstruction for securing said fishing line to said attachment portion, and

said other opening having an entrance diameter portion sized which is larger in diameter than said exit diameter portion and has a diameter to readily accept easy passage of the fishing line through said other opening.

5,081,786
FISHING LURE ARTICLE
Jerry Cobb, P. O. Box 838, West Yellowstone, Mont. 59758
Filed Sep. 21, 1990, Ser. No. 586,580
Int. Cl.[5] A01K *91/00*
U.S. Cl. 43—44.89 **27 Claims**



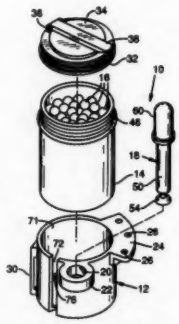
1. A fishing lure article comprising:

(a) a metallic hook portion having a barbed end portion;

(b) a weighted head portion opposite the barbed end, and of a metallic alloy material with a melting point substantially lower than the melting point of the hook portion; and

(c) wherein the metallic alloy forming the head portion comprises tin and antimony, and is about ninety percent tin (Sn), and substantially lead free.

5,081,787
METHOD AND APPARATUS FOR HANDLING SALMON EGGS
Billy L. Adams, 4860 Wandering Cir., Colorado Springs, Colo. 80917
Filed Mar. 16, 1990, Ser. No. 494,577
Int. Cl.[5] A01K *97/04*
U.S. Cl. 43—55 **8 Claims**



1. A method for removing an individual piece of bait from a container and placing it on a fishhook, comprising:

(a) inserting a bowl defining a small socket into a container including a plurality of pieces of bait;

(b) engaging a single piece of bait with said socket surrounding at least a portion of said piece of bait;

(c) imposing a pressure differential upon said piece of bait by reducing pressure within said socket;

(d) utilizing said pressure differential to hold said piece of bait in said socket;

(e) thereafter removing said bowl from said container with said piece of bait held in said socket, while maintaining said pressure differential;

(f) inserting a point of a hook into said piece of bait while said piece of bait remains held in said socket; and

(g) releasing said piece of bait from said socket by reducing said pressure differential.

5,081,788
WIND-ORIENTED FUNNEL TRAP
Patrick F. Dowd, Peoria; Robert J. Bartelt, East Peoria, and Donald T. Wicklow, Peoria, all of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed May 1, 1991, Ser. No. 694,534
Int. Cl.[5] A01M *1/04*
U.S. Cl. 43—107 **28 Claims**

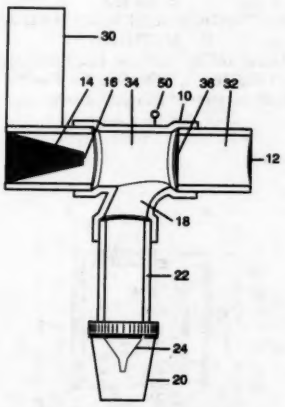
1. An insect trap comprising:

a. a chamber for holding an insect attractant and exposing said attractant to a current of air, said chamber having first and second openings, said first opening positioned on a side of said chamber and allowing passage of air but not said insects into said chamber;

b. at least one funnel-shaped entrance to said chamber positioned approximately opposite said first opening, and tapering toward said first opening;

c. a collection container having an entrance, said container

communicating with said chamber through said second opening and said entrance;



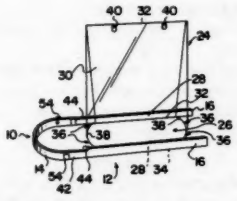
d. a wind vane mounted to the exterior of said chamber for orienting said first opening upwind of said funnel-shaped entrance.

5,081,789

FLY CATCHER DEVICE AND METHOD

Yong S. Rhee, 251-1 Soo Yoo 2nd Dong, Dohbong-ku, Seoul, Rep. of Korea

Filed Nov. 1, 1990, Ser. No. 607,729
Int. Cl.[5] A01M *3/00*
U.S. Cl. 43—134 **13 Claims**



1. Fly catcher device comprising:

(a) tong means which has two rigid arm segments flexibly or pivotally joined on one end so as to normally be in an open position, said tong means being capable of being manually closed so that the two rigid arm segments are moved into contact with each other;

(b) two rigid arms, each of the rigid arms being affixed in a removable manner to the other end of one of the rigid arm segments of the tong means;

(c) flexible bag means having a generally rectangular or trapezoidally-shaped opening in one periphery portion thereof, the opposite sides of the bag means in the opening region thereof being affixed to the two rigid arm segments.

5,081,790

SELF-MAINTENANCE PLANTER

Robert A. Hinton, 14006 Fairoak Crossing, San Antonio, County of Bexar, Tex. 78231-1914

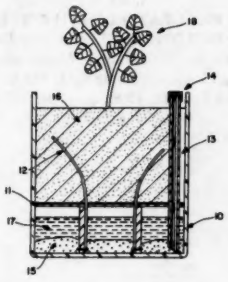
Filed May 24, 1988, Ser. No. 198,185
Int. Cl.[5] A01G *9/02*
U.S. Cl. 47—81 **1 Claim**

1. A self-maintenance planter device for nuturing, watering, and purifying the water for plants comprising:

A. A containment vessel having:
1. A vertical wall,
2. A bottom, and

B. A support plate having:
1. External dimensions conforming with the shape of the internal periphery of the containment vessel,
2. At least one aperture for receiving conduit wicks to provide for bidirectional water flow,
3. One aperture to accommodate a water addition tube,
4. At least one support leg to define a water reservoir in a lower chamber of the containment vessel, and

C. At least one conduit wick having:
1. A length adequate to provide a conduit of water flow from the bottom of the vessel to the top of support plate,
2. At least one fastening means to secure said wicks to the lower portion of said support legs, and



D. A water addition tube having:
1. A length to extend from above the potting soil to the bottom of the containment vessel,
2. An internal passage to convey refill water into the water reservoir, and

E. A level detection dip stick to indicate water level in said water reservoir vessel, having:
1. A cap secured to the upper end of said dip stick to cover the water addition tube to decrease the rate of water evaporation from said reservoir, and

F. An absorbent substance having:
1. An affinity for absorption of noxious substances from water received from the planter soil,
2. A bulk volume less than the water/absorbent chamber formed below said support plate in the lower chamber of said containment vessel.

5,081,791

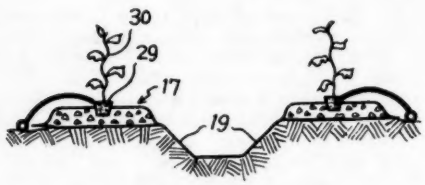
SUPPORT FOR OUT-OF-GROUND CULTIVATION COMPRISING SUPERABSORBENT PARTICLES AND METHOD OF PRODUCTION

Gerard Baron, St Laurent Du Var, and Jacques Vuillemin, La Gaude, both of France, assignors to Beghin-Say S.A., Thumeries, France

Filed Jul. 29, 1987, Ser. No. 93,023
Claims priority, application France, Nov. 29, 1985, 85 17741
Int. Cl.[5] A01G *9/02*
U.S. Cl. 47—66 **12 Claims**

1. A cultivation support for use in the field of out-of-ground cultivation comprising an envelope made of a waterproof material and a layer of superabsorbent particles contained in

said envelope, said superabsorbent particles being uniformly distributed on and fixed to a support wherein said support is a



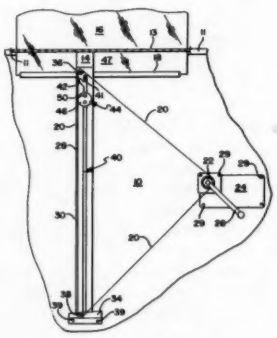
holding sheet separate from said envelope or the internal lower surface of said envelope.

5,081,792

WINDOW REGULATOR WITH ORTHOGONAL PUSHOUT FOR FLUSH WINDOW

Mark A. Huebner, St. Clair Shores, Mich., assignor to Wickes Manufacturing Company, Southfield, Mich.

Filed Feb. 22, 1990, Ser. No. 482,892
Int. Cl.[5] E05D *15/10*
U.S. Cl. 49—221 **4 Claims**



1. A window regulator for imparting vertical and horizontal movement to a vertical window, comprising:

a vertical track mounted on the vehicle and having an elongated slot and a slot arm branching from the elongated slot to one side at a point spaced below the top end of the elongated slot,

a slide mechanism mounting the lower end of the window and being slidable in the elongated slot to raise and lower the window, the slide mechanism including

an upper guide received in the elongated slot,

a lower guide received in the elongated slot and spaced below the upper guide so as to register with the slot arm when the upper slide is at the upper end of the elongated slot,

rotating means mounting the lower guide on the upper guide for rotation about a pivot axis, and

a cam mechanism mounting the window for horizontal movement upon rotation of the rotating means, and

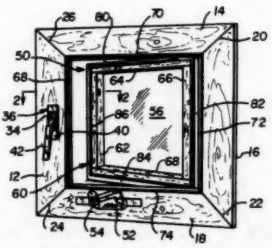
drive means including a drive mechanism and a flexible drive member having a vertical reach adjacent the track, the flexible drive member interconnecting the drive mechanism and the rotating means, the drive means being operable to move the slide mechanism in the slot to raise and lower the window, and imparting a rotational moment on the rotating means to enable rotation only when the upper guide is seated at the upper end of the elongated slot, and the lower guide into the slot arm and causes the cam mechanism to move the window horizontally.

5,081,793

WOOD CLAD WINDOW ASSEMBLY AND ASSOCIATED METHOD

Gerald D. Mauro, 135 Springhouse La., Pittsburgh, Pa. 15238

Filed Jun. 7, 1990, Ser. No. 534,971
The portion of the term of this patent subsequent to Jun. 13, 2006, has been disclaimed.
Int. Cl.[5] E06B *3/00*
U.S. Cl. 49—501 **49 Claims**



1. A clad window assembly having a sash mounted on a window frame comprising

a nonwooden frame having an inner surface, an outer surface, a sash engaging surface and a wall engaging surface,

a nonwooden sash having an exterior surface, an interior surface, a pane engaging surface and a frame engaging surface,

a pane secured to said sash,

said nonwooden frame and said nonwooden sash cooperating to define a window,

a plurality of first wood cladding members secured to said nonwooden frame inner surface,

a plurality of second wood cladding members secured to said sash, and

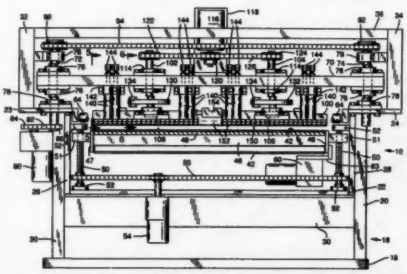
said first wood cladding members and said second wood cladding members cooperating to provide an interior wood appearance for said nonwooden windows.

5,081,794

SANDER WITH ORBITING PLATEN AND ABRASIVE

Donald E. Haney, 11376 Ramsey Rd., Gold Hill, Oreg. 97525

Filed Aug. 17, 1990, Ser. No. 568,902
Int. Cl.[5] B24B *7/06, 7/02*
U.S. Cl. 51—60 **20 Claims**



1. A free-standing orbiting sander for abrading products comprising:

an elogate platen;

a brace:

at least two rotatable stepped drive shafts interconnecting the brace and the platen:

an abrasive secured to the platen;

a motor for rotating the drive shafts, where the rotation of the drive shafts causes the platen to move in a translational orbit;

a plurality of yieldably resilient stabilizers attached to the brace and extending toward the platen but not attached to the platen, each stabilizer applying yieldable pressure to and maintaning the stability of the platen's orbital movement; and

a conveyor adjacent the platen to convey the products toward the platen while the drive shafts move the platen.

5,081,795

POLISHING APPARATUS

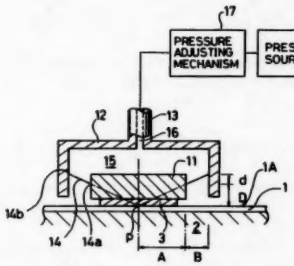
Kouichi Tanaka, Takasaki, and Isao Uchiyama, Nishigo, both of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 418,263, Oct. 6, 1989, abandoned. This application Jan. 22, 1991, Ser. No. 643,094

Claims priority, application Japan, Oct. 6, 1988, 63-250893

Int. Cl.[5] B24B *5/00*

U.S. Cl. 51—131.1 **10 Claims**



5. A polishing apparatus for polishing a surface of an object using a relative frictional movement between said object and a polishing cloth, said apparatus comprising:

a plurality of plates each having substantially flat top and bottom surfaces and a side surface and each having at least one object to be polished, respectively, secured to its substantially flat bottom surface;

a support member surrounding said plurality of plates by way of respective predetermined gaps therebetween; and

a plurality of holding means each one being comprised of essentially a non-shrinkable and flexible member and having an outer peripheral edge connected to said support member and an inner peripheral edge connected to the side surface of a respective one of said plurality of plates and being provided for maintaining said at least one object parallel to the surface of the polishing cloth;

wherein an intersecting point P, formed by extension of imaginary lines along the cross section of opposite sides of said holding means, being defined by the following equation:

$$D=(A/B)d$$

wherein: A is the horizontal distance between the intersecting point P and the attaching position of said holding means to said plate; B is the horizontal distance between the attaching positions of said holding means to said plate and to said head section; D is the vertical distance between the intersecting point P and the attaching position of said holding means to said plate; and d is the vertical distance between the vertically staggered attaching positions of said holding means to said plate and to said head section.

5,081,796

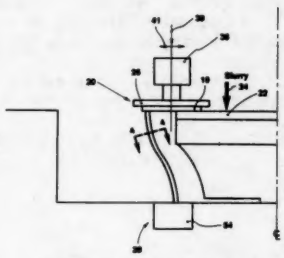
METHOD AND APPARATUS FOR MECHANICAL PLANARIZATION AND ENDPOINT DETECTION OF A SEMICONDUCTOR WAFER

Laurence D. Schultz, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Aug. 6, 1990, Ser. No. 563,054

Int. Cl.[5] B24B *49/00*

U.S. Cl. 51—165.74 **22 Claims**



11. A process for polishing a thin flat generally circular shaped semiconductor wafer having an oxide coating and for detecting the thickness of the oxide coating, comprising:

a. holding the semiconductor wafer in a rotatable polishing head;

b. rotating the semiconductor wafer over a rotating polishing platen under pressure from the polishing head in a polishing slurry;

c. overhanging a portion of a surface of the semiconductor wafer over the polishing platen to expose the surface for endpoint detection of an oxide on the semiconductor wafer;

d. directing a laser beam enclosed in a column of liquid at an unpatterned die on the wafer, for detecting using laser interferometry a thickness of an oxide coating on the wafer; and

e. moving the wafer across the peripheral edge of the polishing platen for overhanging the wafer and for compensating for velocity differentials on different portions of the generally circular shaped wafer.

5,081,797

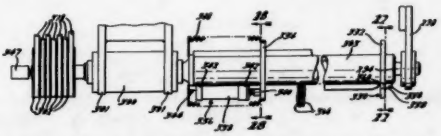
INTEGRATED BUFFING AND GRINDING SYSTEM

Don F. Carlson, Bloomfield Hills, Mich., assignor to Acme Manufacturing, Madison Heights, Mich.

Continuation of Ser. No. 355,685, May 23, 1989, abandoned, which is a division of Ser. No. 269,473, Nov. 11, 1988, Pat. No. 4,930,258. This application May 3, 1991, Ser. No. 695,555

Int. Cl.[5] B24D *13/00*

U.S. Cl. 51—206.5 **9 Claims**



1. A quick change assembly for at least one buffing disk supported on a shaft between end supports, said assembly comprising:

a first plate disposed about the shaft and fixed axially in position along the shaft;

a second plate disposed about the shaft and spaced axially from the first plate, the at least one buffing disk adapted to be disposed about the shaft between said first plate and said second plate;

means for moving said second plate axially along the shaft relative to said first plate to provide a constant pressure on the at least one buffing disk; and

said moving means comprising a plurality of cylinders circumferentially mounted to the shaft and having a corresponding piston rod secured to said second plate to extend and retract said second plate axially relative to said first plate.

5,081,798

GRINDING BODY AND MANUFACTURING PROCEDURE THEREFOR

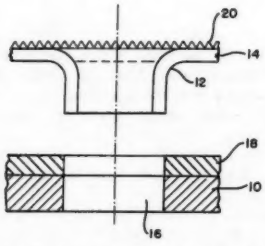
Heinrich Clasen, Gerstenbergstrasse 34, D-2060 Hamburg 52, Fed. Rep. of Germany

PCT No. PCT/DE87/00553, § 371 Date Jul. 26, 1990, § 102(e) Date Jul. 26, 1990, PCT Pub. No. WO89/04742, PCT Pub. Date Jun. 1, 1989

PCT Filed Nov. 27, 1987, Ser. No. 477,967

Int. Cl.[5] B24B *55/06*

U.S. Cl. 51—273 **2 Claims**



1. Grinding body with a grinding foil comprising an abrasive on a flexible abrasive backing and a support which has an adhesive area on its working surface, for firmly holding the grinding foil, characterized in that the abrasive backing consists of a foil of strip steel having thickness of 0.05 to 0.25 mm, the foil of strip steel is provided with fixing elements, the adhesive backing is permanently magnetic and arranged at right-angles to the support surface, the fixing elements are in the form of ring-shaped, tube-like inner flanges of said foil, and the support surface for accommodating the ring-shaped, tube-like inner flanges is provided with matching holes also used as suction holes,

whereby the inner flanges function as cooling elements and as covers between the grinding foil and the adhesive backing, as well as reliably preventing splinters and grinding dust from penetrating between the grinding foil and the adhesive backing,

and whereby the magnetic adhesion of the adhesive backing secures the grinding foil at its place by means of its magnetic forces acting at right-angles to the support surface,

so that the magnetic adhesive forces together with the fixing elements locked in the holes provide for a force locked and a non-positive engagement between the grinding foil and the support.

5,081,799

BLASTING APPARATUS

Lawrence Kirschner, Flanders; Michael S. Lajoie, Basking Ridge, both of N.J., and William E. Spears, Jr., Houston, Tex., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Continuation of Ser. No. 505,918, Apr. 6, 1990, abandoned. This application Jul. 12, 1991, Ser. No. 730,514

Int. Cl.[5] B24C *3/00*

U.S. Cl. 51—410 **17 Claims**

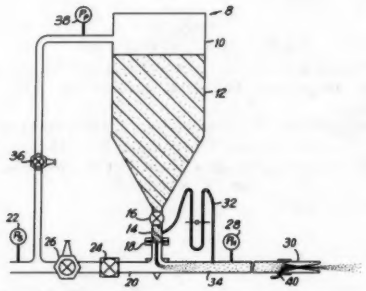
1. A method for blasting, comprising the steps of:

containing a quantity of blasting medium comprised of fine particles having a mean particle size of from about 50 to 1000 microns within a pressure vessel;

pressurizing said pressure vessel by providing fluid communication between said pressure vessel and a source of pressurized air;

feeding said blasting medium from said pressure vessel, through an exit line to a conveying line, said conveying line being in fluid communication with said source of pressurized air through an air line;

passing said blasting medium through a variable size orifice opening positioned in said exit line, said orifice opening being adjustable to predetermined areas which restrict the flow of said blasting medium to regulate the flow rate consistent with the particle size of said blasting medium;



mixing said blasting medium with the stream of pressurized air flowing within said conveying line;

sensing the pressure in said pressure vessel and said conveying line;

regulating the pressure in said air line and in said conveying line to maintain a pressure differential at a preselected level such that the pressure level within said pressure vessel is greater than the pressure within said conveying line;

discharging said mixture of blasting medium and said stream of pressurized air through a nozzle at the end of said conveying line.

5,081,800

VEHICULAR DEVICE DESIGNED TO OPERATE IN ENCLOSED CANALS

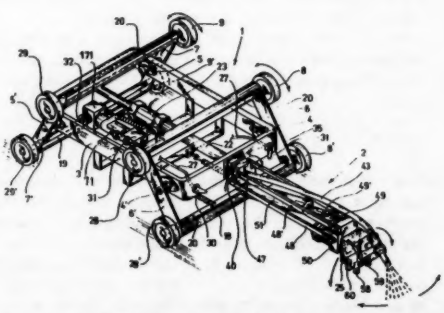
Heinz Ruholl, Emsdetten, Fed. Rep. of Germany, assignor to Heinrich Schlick GmbH, Greven-Reckenfeld, Fed. Rep. of Germany

Filed Oct. 23, 1989, Ser. No. 425,476

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1988, 3836277; Oct. 25, 1988, 3836278

Int. Cl.[5] B24C *3/06;* **B62B** *3/10*

U.S. Cl. 51—411 **12 Claims**



1. A vehicular device designed to operate inn enclosed canals, comprising, in combination:

(a) a main chassis having a longitudinal centerline;

(b) a swivel head connected to the front end of the main chassis by means of an adjustable manipulator arm;

(c) at least two pairs of supporting arms rotatably attached at their midpoints to the main chassis and extending above and below the main chassis; said pairs of supporting arms being so supsended from the main chassis that, relative to one another and in relation to the main chassis, they move in opposite rotational directions; and

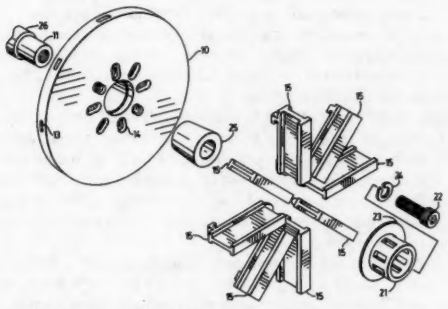
(d) vehicle wheels attached to the supporting arms at exactly the same distance above and below said centerline of the main chassis, the distance of said wheels from said centerline being variable by the rotational movement of said supporting arms.

5,081,801

BLASTING WHEEL APPARATUS AND BLADES THEREFOR

Stefan Fylak, 463 Fairall Street, Ajax, Ontario, Canada L1S 1R8

Continuation of Ser. No. 484,281, Feb. 26, 1990, abandoned. This application Feb. 19, 1991, Ser. No. 657,268
Claims priority, application Canada, Mar. 2, 1989, 592915
Int. Cl.[5] B24C *5/06*
U.S. Cl. 51—435 **9 Claims**



1. A blade for use in a blasting wheel apparatus for accelerating particulate materials comprising

a single disc presenting a substantially planar disc face and a circumferential surface, having complimentary recess means comprising a plurality of like radially extending first recesses in said circumferential surface, spaced axially from said disc face and a plurality of like second recesses in said disc face in radial alignment with said first recesses and said disc mounted on a rotatable drive means,

a plurality of like blades extending radially relative to said disc face and circumferentially spaced about said disc face, having anchoring means for engaging with said complimentary recess means of said disc whereby said anchoring means is remote from the path of the accelerating particulate materials,

a flange for presenting to said plurality of blades upon being mounted onto said disc and a locking means for urging said flange, said plurality of blades and said disc together thereby securing said plurality of like blades from separation from said disc, wherein said blade comprising

a base having a substantially planar base surface for presenting to said disc face, said anchoring means extending from said base and comprising a hooking member and a lug at opposite end regions of said blade, said hooking member having a depending portion extending substantially parallel with said base surface in a direction towards said lug, said depending portion adapted for matingly engaging said first recess, and

a bearing means facing opposite said base surface and extending radially inward from said blade for engagement between said flange and said disc,

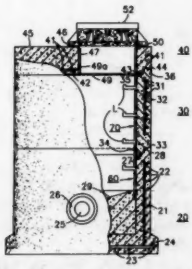
whereby said blades are mounted onto said disc by first registering said hooking member within one of said first recesses and secondly registering said lug within a radially aligned second recess, applying said flange to said bearing means and locking said blades to the disc.

5,081,802

METHOD AND APPARATUS FOR LINING MANHOLE ASSEMBLIES AND THE LIKE

James A. Westhoff, Langhorne; James A. Kelly, Warrington, both of Pa., and James E. Parker, Myakka City, Fla., assignors to Poly-Tec Products, Inc., Tullytown, Pa.

Filed Feb. 15, 1990, Ser. No. 480,285
Int. Cl.[5] E02D *29/14*
U.S. Cl. 52—20 **20 Claims**



1. A liner assembly for lining the annular-shaped interior of a cast structure to protect the cast structure from corrosion, said assembly comprising:

a plurality of liner sections, each section being comprised of a curved semi-rigid member having a convex surface engaging said cast structure and a concave surface defining the interior of said structure;

said member having a plurality of spaced substantially parallel ribs integral with said member and extending into and embedded in said cast structure;

the opposing sides of each member extending substantially parallel to the longitudinal axis of said annular-shaped interior having integral flanges extending outwardly from said convex surface and into said cast member;

the flanges of each member being arranged in opposing fashion with the flanges of adjacent members forming said liner assembly;

resilient, compressible gasket means being arranged between the flanges of adjacent members;

fastening means joining the opposing flanges for compressing said gasket therebetween to form a liquid-tight seal along said joint;

said gasket being an elongated strip of resilient compressible material having a substantially oblong cross-section, said strips extending the entire length of each joint defined by the opposing flanges of adjacent liner section members;

said liner assembly providing a liquid-tight seal about the annular interior of said cast member.

5,081,803

PIT AREA FOR A RACE TRACK

Terrill E. Jackson, P.O. Box 1385, Cartersville, Ga. 30120

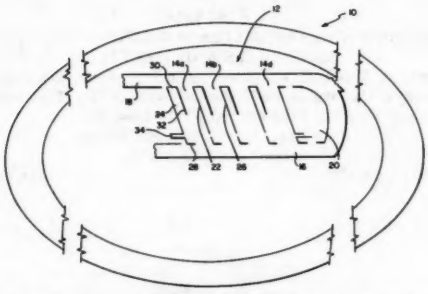
Filed Dec. 31, 1990, Ser. No. 636,504
Int. Cl.[5] E01C *1/00*; C04H *6/00*
U.S. Cl. 52—33 **13 Claims**

1. A pit area for a race track, comprising:

first and second stalls sharing a common interior sidewall and each having an exterior sidewall, each of said stalls having a first end wall adjacent one of said sidewalls extending toward the other of said sidewalls defining an entrance to said stall, and each of said stalls having a second end wall adjacent one of said sidewalls extending

toward the other of said sidewalls defining an exit from said stall;

an entrance driveway adjacent said stalls with said stalls being at an angle to said entrance driveway; and



an exit driveway adjacent said stalls with said stalls being at an angle to said exit driveway.

5,081,804

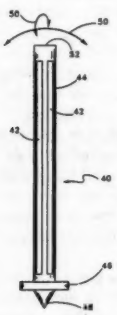
POWER LINE PYLON AND LAMP POST

Erland Andersson, Gustavsberg, and Tage Skönvall, Hökerum, both of Sweden, assignors to Gustavsberg VVS Aktiebolag, Gustavsberg, Sweden

Filed Sep. 8, 1989, Ser. No. 404,779

Int. Cl.[5] E04H *12/08*

U.S. Cl. 52—40 **18 Claims**



1. A kit for constructing a power line pylon for supporting an electrical power line above and for being driven within a base terrain, said kit comprising:

a first pylon section configured to be driven into the base terrain;

a second pylon section for being attached to said first pylon section;

supporting means for being attached to said power line pylon for supporting the electrical power line above the base terrain;

each said first pylon section and each said second pylon section comprising a conical end portion and an integral socket portion;

each said conical end portion defining a conicity that substantially coincides with the internal conicity of each said integral socket portion; and

said conicity of each said conical end portion and said internal conicity of each said integral socket portion having a tapering ratio of about 1:14 to about 1:20 such that said conical end portion of one of said first pylon section and said second pylon section is adapted to be received by and self-lock with said socket portion of the other of said first pylon section and said second pylon section.

5,081,805

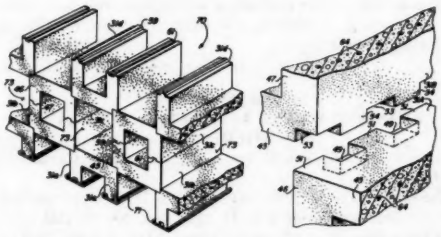
PRECAST CONCRETE BUILDING UNITS AND METHOD OF MANUFACTURE THEREOF

M. Omar A. Jazzar, 520 Cleveland St., Clearwater, Fla. 34615

Division of Ser. No. 398,095, Aug. 23, 1989, abandoned. This application Jul. 27, 1990, Ser. No. 558,858

Int. Cl.[5] E04H *1/00*

U.S. Cl. 52—79.2 **8 Claims**



1. A freestanding unitary precast concrete, one-half room building unit having an inverted U-shaped cross-sectional configuration and comprising:

a generally horizontally extending web having upper and lower surfaces and opposite longitudinal edges; and

a pair of spaced, generally vertically extending flanges having bases; said flanges being integral with and depending from said lower surface of said web respectively adjacent said longitudinal edges;

said base of one of said flanges being formed with a tongue and said base of the other of said flanges being formed with a groove, and said tongue of said one flange being relatively dimensioned and configured to complement and fit into said groove of said other flange of an identical other unit brought in flange-to-flange inverted position relative to said unit;

said web being dimensioned, configured and adapted to serve as the ceiling or floor of a room of a building and said flanges being dimensioned, configured and adapted to serve as upper or lower halves of the room; and

said web being formed adjacent said longitudinal edges with alternating tabs and voids, the positions of said tabs adjacent one longitudinal edge corresponding to the positions of said voids adjacent the other longitudinal edge, and said tabs of said one edge being relatively dimensioned and configured to complement and fit into said voids of said other edge of an identical other unit brought in diagonally adjacent inverted position relative to said unit.

5,081,806

BUILDING STRUCTURE FOUNDATION SYSTEM

Yves M. Pommelet, 837 Canterbury Road, Victoria, British Columbia, Canada V8X 3E5

Continuation-in-part of Ser. No. 385,648, Jul. 25, 1989. This application Sep. 18, 1989, Ser. No. 408,633

Int. Cl.[5] E02D *27/34*

U.S. Cl. 52—167 R **8 Claims**

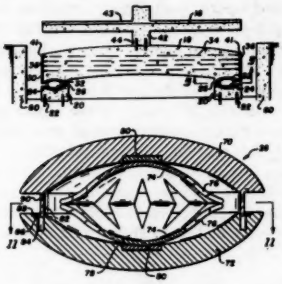
1. A foundation system for a building structure comprising:

a plurality of pairs of fixed bases arranged to support the structure, the bases in each pair spaced apart and having hardened dished top smooth surfaces;

a steel three dimensional curved member of elliptical shape, located in the dished top surface of each base, said curved member being formed in two halves with a spring means therebetween adapted to be compressed a limited amount;

concrete beams, having post tensioned members therein, extending between bases in each pair and having hardened reverse dished cups on the lower surface at the ends of the

beams, to rest on the curved member located in the dished top surface of each base, and



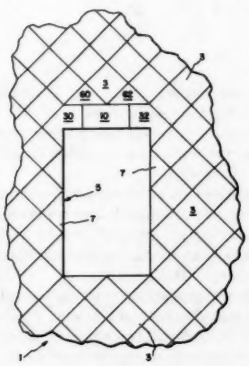
support means for the building structure on the concrete beams between the ends of the beams.

5,081,807

LINTEL BLOCK CONSTRUCTION

Andrew Murdza, Pasadena, Md., assignor to G/DEC International, Ltd., Upperco, Md.

Filed Mar. 28, 1991, Ser. No. 676,351
Int. Cl.[5] E06B *1/00*
U.S. Cl. 52—204 **7 Claims**



1. In a wall construction consisting of a multiplicity of generally rectangular cubic blocks and triangular cross-section blocks assembly together to form a wall having an opening therethrough, the improvement comprising a lintel defining an upper portion of said opening, supporting portions of said wall above said lintel and merging into said wall, said lintel comprising:

a) a first block having a first surface defining a first upper corner of said opening and a second surface engaging at least one of said rectangular cubic blocks;

b) a second block having a first surface defining a second upper corner of said opening and a second surface engaging at least another of said rectangular cubic blocks;

c) a third block interconnected between said first and second blocks and having a first surface defining a top surface of said opening and a second surface generally parallel to said third block first surface and spaced therefrom; and

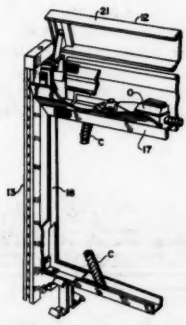
d) a fourth block having a first surface engaging said third block and one of said first block and said second block, and, a second surface engaging at least a further rectangular cubic block.

5,081,808

PARTITION WITH ENCLOSURE

John M. Bastian, and Billy J. Ahola, both of Manitowoc, Wis., assignors to Hamilton Industries, Inc., Two Rivers, Wis.

Continuation of Ser. No. 294,289, Jan. 6, 1989, abandoned. This application Dec. 26, 1990, Ser. No. 634,773
Int. Cl.[5] E04B *2/78;* E04H *1/00*
U.S. Cl. 52—220 **10 Claims**



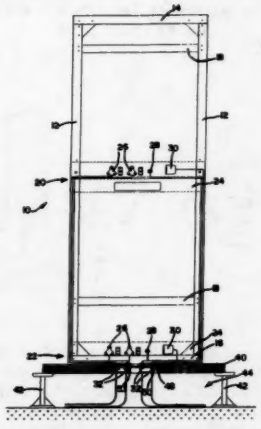
1. A panel for a furniture partition system, said panel comprising: a frame; an enclosure disposed at an edge portion of the frame, said enclosure including an elongate housing having a base portion and side wall portions defining an elongate openir.g; cover means normally closing a substantial portion of the opening; and connecting means disposed in the housing and secured to the base portion of the housing for connecting the cover means to the housing, said connecting means allowing the displacement of the entire cover means to a predetermined limit outwardly and laterally of the housing and preventing displacement beyond those limits.

5,081,809

DEMOUNTABLE WALL PANELLING

Bryan H. Thompson, Kensington, South Africa, assignor to Environmental Panelling Systems (PTY) Ltd., South Africa

Filed Nov. 26, 1990, Ser. No. 617,785
Int. Cl.[5] E04B *2/00*
U.S. Cl. 52—221 **16 Claims**



1. A framework section for a demountable wall panelling system, which includes a plurality of framework elements including a base member forming the main structure of the

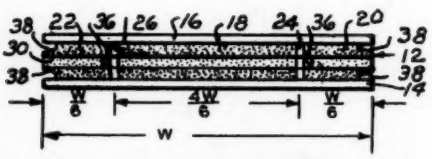
framework section, at least one set of power supply points mounted on the said main structure and a set of connector formations electrically connected to the power supply points, the connector formations being positioned on the base member in a location in which, upon location of the framework section into its operative configuration, the connector formations are electrically connected to the complementary formations provided within the floor region where the framework section is located.

5,081,810

BUILDING PANEL

Raymond L. Emmert, Oklahoma City, Okla., assignor to Emmert Second Limited Partnership, Oklahoma City, Okla.

Filed Jun. 11, 1990, Ser. No. 536,370
Int. Cl.[5] E04B *7/02, 1/00*
U.S. Cl. 52—221 **9 Claims**



1. A generally rectangular building panel, comprising:

a core of plastic foam material having opposing sides and having longitudinal edge surfaces and having opposing end surfaces;

a pair of panel stiffeners extending the entire thickness and length of the core material,

said pair of stiffeners being symmetrically spaced-apart $\frac{4}{6}$ w

where w is the width of the panel; and,

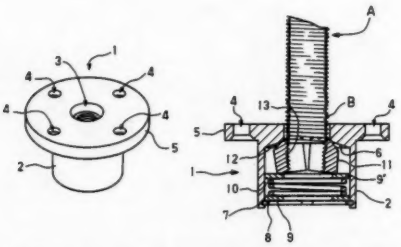
panel skin means bonded to the major faces of the core material and projecting a predetermined distance beyond the opposing end surfaces of the core material for forming a structural member receiving recess in the respective end surface of the panel.

5,081,811

SELF-LOCKING NUT MECHANISM

Kensuke Sasaki, Fukuoka, Japan, assignor to Housei Ttekou Co., Ltd., Fukuoka, Japan

Filed Feb. 28, 1991, Ser. No. 662,080
Claims priority, application Japan, Sep. 7, 1989, 1-105921
Int. Cl.[5] E05C *5/04*
U.S. Cl. 52—227 **12 Claims**



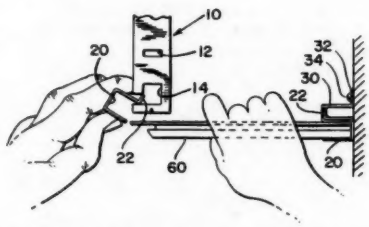
1. A self-locking nut mechanism operable to be mounted on a bolt element to secure structural members together comprising a nut body having a cylindrical portion and a flange portion, means on said flange portion for fastening said nut body to one of said structural numbers, a through hole in said nut body having a first hole portion with one diameter and a second hole portion with another diameter greater than said one diameter, said nut body having a transition section between said first and second hole portions, said transition section having a first tapered part, a split-nut means disposed in said second hole portion, said split-nut means being split into at least two split-nut sections, said split-nut means having a longitudinal end having a second tapered part, biasing means in said nut body biasing said split-nut means toward said first tapered part such that said first and second tapered parts are biasingly engaged, said bolt element having external fastening means, said split-nut means having internal fastening means, said bolt element being axially insertable into said split-nut means such that said external fastening means engage said internal fastening means to temporarily separate said split-nut sections against the bias of said biasing means as said first tapered part engages said second tapered part, said bolt element being precluded from being withdrawn axially from said split-nut means by the mating of said external and internal fastening means.

5,081,812

CEILING DEVICES

Henry B. Reynolds, 6517 Millwood Rd., Bethesda, Md. 20817

Filed May 16, 1990, Ser. No. 524,059
Int. Cl.[5] E04B *9/30, 9/24*
U.S. Cl. 52—484 **8 Claims**



1. A hung ceiling suspension system comprising

at least two channel members, each of which has an elongated U-shaped receptacle that is dimensioned and configured to receive and retain the edge of ceiling tiles to be associated therewith,

means for retentatively affixing one of said channel members to a wall with its U-shaped receptacle substantially horizontal and facing outwards from said wall,

and a plurality of hanger means, each of which consists of an elongated hanger that

has mounting means at one of its ends adapted to retain the other of said channels, and is adapted for affixing at the other of its ends to an overhead support with the U shaped receptacle of the channel being retained by it substantially parallel to, coplanar with, and facing toward that of said one of said channels.

5,081,813

METAL WALL FRAME STRUCTURE

Stanley B. White, Mt. Ousley, Australia, assignor to Allied Constructions Pty. Limited, New South Wales, Australia

Filed Feb. 27, 1990, Ser. No. 485,715
Int. Cl.[5] E04B *2/60;* **E04C** *2/38*
U.S. Cl. 52—656 **10 Claims**

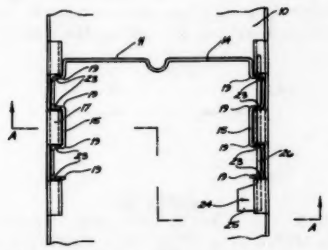
1. A metal wall frame structure, comprising:

a horizontally disposed top plate;

a horizontally disposed bottom plate;

a plurality of vertically extending wall studs interconnecting the top and bottom plates; the top and the bottom plates being substantially identical and each being in the form of a generally U-shaped channel having channel side walls, a channel base wall which interconnects the channel side walls, and a plurality of paired inwardly directed tabs arrayed along each of the channel side walls; each of the studs having a generally U-shaped section which has stud

side walls and a stud base wall which interconnects the stud side walls and which has a width approximately equal to the spacing between the channel side walls, whereby terminal ends of the studs may be nested within the channels defined by the plates, and wherein each stud is adapted to be nested between two adjacent pairs of tabs or around a single pair of tabs, or both, each stud having adjacent at least one end and adjacent to each side wall at least a pair of apertures aligned transversely to the axis of



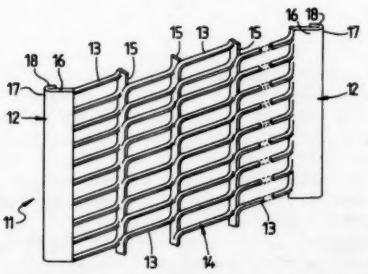
the stud, and locking means comprising a pin extending through each pair of aligned apertures in the stud and engaging against the side of at least one associated tab proximal to the base wall of the associated plate to urge the said end of the stud into contact with the base wall of the adjacent plate; and wherein each stud is formed, at least adjacent each end, with an inwardly extending longitudinal corrugation, each corrugation being so dimensioned that a tab will neatly nest with the corrugation.

5,081,814

LATH PANEL AND METHOD OF MANUFACTURE

David B. Singletary, Morris, and Larry W. Malone, Hueytown, both of Ala., assignors to Alabama Metal Industries, Birmingham, Ala.

Filed Oct. 22, 1990, Ser. No. 601,894
Int. Cl.[5] E04C *2/42, 5/07*
U.S. Cl. 52—670 **6 Claims**



1. A reinforced lath panel having a mesh on which plaster or other plastics having a high viscosity can be supported in a structural unit comprising:

(a) at least one elongated marginal rib connected to said mesh along one edge thereof and, having a plurality of integrally connected parallel and abutting layers, wherein each said marginal rib is folded about a longitudinal axis to form a rounded outer edge which defines a lateral margin of said lath panel; and

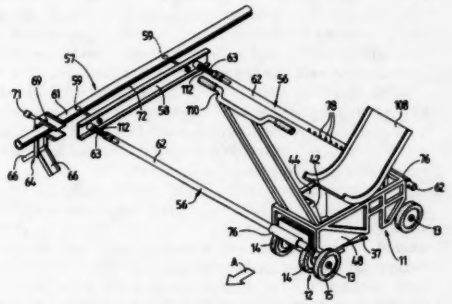
(b) a plurality of integrally connected strands connected to said marginal rib, wherein said layered marginal rib is substantially more rigid than said strands.

5,081,815

MECHANIZED SHINGLE APPLYING APPARATUS

Joe W. Carnell, Rte. 4, Box 124, Ozark, Ala. 36360

Filed Jul. 16, 1990, Ser. No. 553,233
Int. Cl.[5] E04B *01/00*
U.S. Cl. 52—747 **34 Claims**



16. Apparatus for applying shingles to a roof, comprising:

(a) a primary carriage supported by a first set of wheels;

(b) means laterally encompassed within said primary carriage for securing a shingle to an underlying roof, being independently supported by a second set of wheels for concomitant horizontal motion with said primary carriage;

(c) means mounted to said primary carriage for conveying said shingle beneath said securing means; and

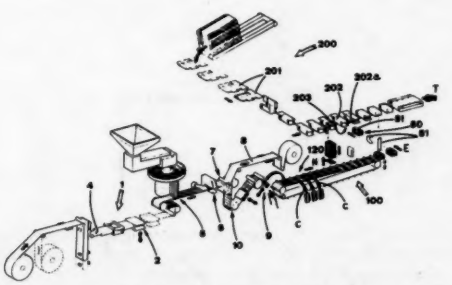
(d) means mounted to said primary carriage and said roof for guiding said primary carriage in selected directions across said roof.

5,081,816

APPARATUS FOR RECEIVING BLISTER PACKS FROM A PRODUCT PACKAGING LINE AND FOR INSERTING THESE BLISTER PACKS INTO CARTONS

Paolo Cardinali, Conselice, Italy, assignor to I.M.A. Industria Macchine Automatiche S.p.A., Ozzano Emilia, Italy

Filed May 31, 1991, Ser. No. 708,910
Claims priority, application Italy, Jun. 7, 1990, 3546 A/90
Int. Cl.[5] B65B *57/10, 11/52*
U.S. Cl. 53—54 **24 Claims**



1. An apparatus for receiving blister packs from a product packaging line, and for inserting said blister packs into cartons coming from a carton ready-making line operating to obtain cartons from flat blanks or from flat tubular blanks, said apparatus comprising:

a conveyor made as a closed loop and located downstream of a cutting station where said blister packs are formed in said packaging line, said conveyor being connected with its terminal part to said carton ready-making line for obtaining said cartons and featuring an upper surface fitted

with crosspieces forming seats therebetween designed to receive blister packs oriented transversely in respect of said conveyor;

guiding means located at both sides of said conveyor and designed to engage longitudinal edges of said blister packs placed in said seats so that said edges can slide along said guiding means and that said blister packs are centered in respect of said upper surface;

a first device located and operating between said cutting station and the beginning of said upper surface, said device being operated in phase correlation with the operation of said cutting station, and with the motion of said conveyor, so to transfer said blister packs from said cutting station to relative receiving seats of said upper surface which are passing step by step at said beginning of said conveyor, with said blister packs resulting placed into said seats with the blisters turned upwards and with the related longitudinal edges engaging said guiding means;

an ejecting station for ejecting faulty blister packs out from the related seats, said ejecting station being located downstream of said first device;

a second device, positioned downstream of said ejecting station, said second device operating in phase correlation with the motion of said conveyor and being designed to fill empty seats of said upper surface with non-defective blister packs, when said faulty blister packs are removed from said seats, said second device being also able to feed itself, in occasion of a stop of said carton ready-making line in forming at least one carton, with said non-defective blister packs taken from said seats of said upper surface;

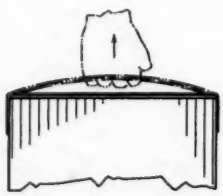
a third device, positioned downstream of said second device near the terminal part of said upper surface, said third device being operated, in phase correlation with the motion of said conveyor and of said carton ready-making line, so as to form stacks of non-defective blister packs, to fold an information leaflet, to move a stack, together with a folded leaflet, perpendicularly in respect of said upper surface, to insert said stack and leaflet into a carton positioned on said carton ready-making line.

5,081,817

CARTON HANDLE APPARATUS

Alexander Nesbitt, 5 Farnsworth Drive, Weston, Ont., Canada M9N 2Z5

Filed Apr. 12, 1988, Ser. No. 180,790
Claims priority, application Canada, Aug. 20, 1987, 545020
Int. Cl.[5] B65B *61/14*
U.S. Cl. 53—134.1 **12 Claims**



1. A readily hand portable tape dispensing apparatus for use in combination with product conveying means, for dispensing a selected length of tape on to a product, comprising:

first tape dispensing means for dispensing said selected length of a first tape on to said product, first and third portions of the tape being adherably securable to respective surfaces of the product;

second dispensing means for dispensing masking element means in positioned adherent relation to a second portion of said first tape located between said first and third tape portions;

means for attaching said masking element to said second portion of said first tape, said attaching means comprising separation means for displacing the downstream end of said masking element means from said first tape, in separated relation therefrom; and

knife means for severing said separated masking element means downstream of said separation means on passage thereof past said knife means;

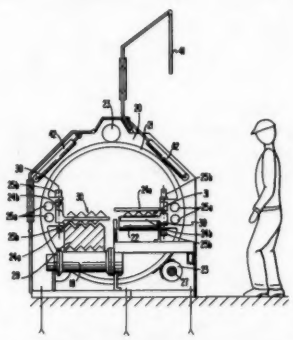
said apparatus further including an upstream roller locking in the path of said product, for adhering said first tape first portion to a leading portion of said product, a downstream roller for adhering said third portion of said first tape to a succeeding portion of said product, and actuator means for electively rotating said upstream roller in loop forming relation with said tape and said masking element means.

5,081,818

METHOD TO PACKAGE SECTIONS AND ROTARY PACKAGING MACHINE THAT EMPLOYS THE METHOD

Alfredo Poloni, Fogliano Di Redipuglia, Italy, assignor to Danieli & C. Officine Meccaniche Spa, Buttrio, Italy

Continuation-in-part of Ser. No. 540,268, Jun. 19, 1990. This application Jul. 20, 1990, Ser. No. 555,030
Claims priority, application Italy, Aug. 7, 1989, 83465 A/89
Int. Cl.[5] B65B *35/50, 35/56*
U.S. Cl. 53—446 **17 Claims**



17. A method for packaging sections, comprising:

delivering said sections in first and second separated layers to first and second delivery positions, respectively, said first and second layers laying on a substantially horizontal plane and being spaced from each other laterally by a predetermined distance, said first layer comprising N number of butted sections and said second layer comprising N±1 number of butted sections;

depositing said first layer of sections on a package being formed under said first delivery position;

clamping said second layer of sections between a pair of clamping arms, said clamping arms being mounted to a ring and facing a center of said ring, said ring being rotatable about a longitudinally extending axis of rotation between said first and second delivery positions;

rotating said ring, said clamping arms and said second layer of sections clamped between said pair of clamping arms to thereby overturn said second layer of sections and position said second layer of sections over said first layer of sections; and

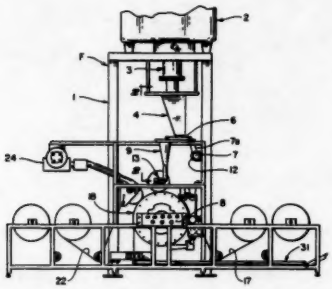
depositing the overturned second layer of sections on said first layer of sections.

5,081,819

METHOD AND APPARATUS FOR MANUFACTURE AND PACKAGING OF FILTER PACKS FOR USE IN A BREW BASKET

Charles E. Cloud, Northbrook, Ill., assignor to Cloud Corporation, Des Plaines, Ill.

Filed Dec. 4, 1989, Ser. No. 445,458
Int. Cl.[5] B65B *47/04, 47/10*
U.S. Cl. 53—453 20 Claims



10. A method of forming product filled individual packages comprising the steps of moving a first continuous length of crinkle type heat sealable filter paper of a relatively nonstretchable type towards a forming area, simultaneously training a stretchable flexible rubber-like belt in contact with the filter paper with the filter paper being between the belt and the forming area, consecutively suction drawing spaced areas of both the filter paper and the rubber-like belt into pouch forming sockets forming side-by-side pouches from the crinkle type heat sealable filter paper spaced along the length of the paper, releasing the suction allowing the stretched areas of the belt to move out of the pockets, filling the pouches with product, causing a second length of paper of heat sealable paper to be superimposed against the first length of paper together, sealing the superimposed lengths of paper together forming filled sealed pouch areas, and cutting out the sealed pouches from the sealed first and second lengths of filter paper to form individual product filled packages.

5,081,820

METHOD AND AN ARRANGEMENT FOR THE APPLICATION OF AN END PLATE TO A PACKING CONTAINER BODY

Ulf Nedstedt, Eslöv, Sweden, assignor to Aktiebolaget Profor, Lund, Sweden

Continuation of Ser. No. 260,075, Oct. 20, 1988, abandoned. This application Dec. 1, 1989, Ser. No. 442,470
Claims priority, application Sweden, Nov. 5, 1987, 8704322
Int. Cl.[5] B65B *43/00;* B29C *57/10*
U.S. Cl. 53—456 17 Claims

1. A method for sealing an end plate to a packing container body, comprising the steps of:

enclosing a container body in a jacket having a chamber with one end of the container body projecting through an opening in the chamber, said jacket having a bottom part connected to a lower end thereof, said bottom part having a centrally situated recess and a duct for connecting the centrally situated recess to a source of vacuum, said bottom part including a perforated supporting element that extends across the centrally situated recess for supporting the container body within the chamber;

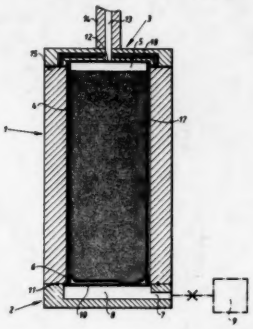
placing a thermoplastic end blank over said end of the container body and across the opening;

applying a cover over the opening to fix a peripheral edge of the end blank between the cover and the jacket;

establishing a fluid-tight seal between the cover and the jacket;

heating the end blank to a softening temperature; and

pressing the softened end blank into sealing engagement with said end of said container body by drawing a vacuum in the chamber while maintaining the interior of the cover at a substantially greater pressure, whereby the end blank is sealed to said end of the container body as a result of the



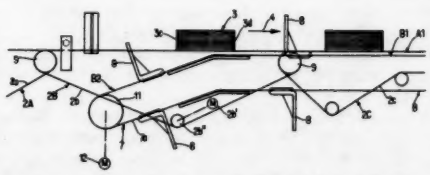
vacuum drawn in the chamber, said vacuum being drawn through the duct, through the centrally situated recess in the bottom part and through the perforations in the supporting element.

5,081,821

METHOD AND APPARATUS FOR MANIPULATING STACKS OF PAPER SHEETS IN WRAPPING MACHINES

Otis Meives, Cleveland, Wis., assignor to Pemco Company, Sheboygan, Wis.

Filed Nov. 16, 1988, Ser. No. 272,125
Int. Cl.[5] B65B *11/18*
U.S. Cl. 53—466 12 Claims



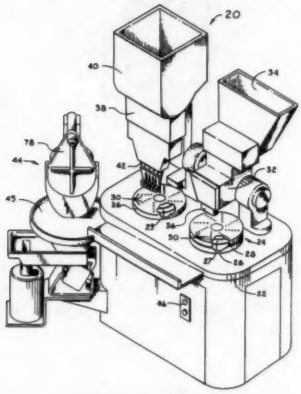
1. A method of supplying stacks of superimposed fully overlapping paper sheets or similar block-shaped commodities to a processing machine, particularly to a wrapping machine, comprising the steps of continuously transporting a series of spaced-apart flights at a first speed along an endless path a portion of which is located in a predetermined plane and wherein the flights continuously advance in a predetermined direction; advancing a series of spaced-apart stacks of superimposed at least nearly fully overlapping sheets at a higher second speed in said predetermined direction along an elongated second path which leads toward the processing machine and a portion of which coincides with said portion of the endless path so that the front sides of successive stacks catch up with successive moving flights and their speed is reduced from the second speed to the first speed to thus align any partially overlapping sheets with the fully overlapping sheets of the respective stacks; disengaging the flights from the respective stacks; moving successive stacks from a first level to a different second level upon disengagement from the respective flights; and draping blanks of wrapping material around successive stacks during movement of stacks between the levels.

5,081,822

AUTOMATIC CAPLET FILLER

William G. Boyd; Willis E. Barns, Jr., both of Greenwood, and Ray B. Turner, Jr., Ninety Six, all of S.C., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Feb. 1, 1990, Ser. No. 473,290
Int. Cl.[5] B65B *43/40, 7/28, 43/50, 43/60*
U.S. Cl. 53—468 **16 Claims**



1. An apparatus for filling a preassembled empty capsule with a solid substance, said capsule having a body portion and a cap portion, comprising:

a base;

a capsule filling ring rotatably and removably mounted on said base, said capsule filling ring having a cavity for receiving said capsule and being manually repositionable on said base;

a capsule rectifier mounted on said base and associated with said capsule filling ring for placing said capsule in a specified orientation into said cavity in said capsule filling ring;

means attached to said base and positionable with said capsule filling ring for removing said cap portion of said capsule from said empty body portion;

a filler mounted on said base and positionable withsaid capsule filling ring for filling said empty body portion with a substance; and

means attached to said base and positionable with said capsule filling ring for placing said removed cap portion onto said body portion containing said substance to join said cap and body portions together.

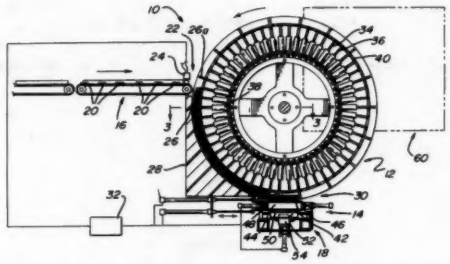
5,081,823

MULTIPLE ARTICLE STACKING AND PACKAGING APPARATUS

Hans van der Ent, 809 Farr Pl., Reading, Pa. 19611

Filed Jul. 23, 1990, Ser. No. 556,761
Int. Cl.[5] B65B *35/50*
U.S. Cl. 53—501 **13 Claims**

1. An apparatus for stacking or packing a series of articles directed toward the apparatus on a continuous feed conveyor, the apparatus comprising: a stacking wheel adapted to rotate about a horizontally-positioned axis, the stacking wheel including a series of projections adapted to selectively extend from the periphery thereof such that each set of adjacent extended projections defines a stacking area therebetween for a predetermined size stack, means for varying the distance between adjacent extended projections on the periphery of the stacking wheel so as to vary the size of the stack defined thereby, means for rotating the wheel in successive increments for receipt of each article being fed, and means for receiving a stack of



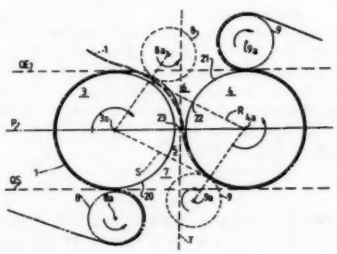
articles as defined by said wheel and for depositing said stack into a package.

5,081,824

FILM UNWINDING CARRIAGE FOR A PACKAGING MACHINE

Jacques Thimon, St. Louis, Mo., and Jack Morantz, Westmount, Quebec, Canada, assignors to Newtec International (Societe Anonyme), Aix-Les Bains, France

Division of Ser. No. 576,698, Aug. 31, 1990, Pat. No. 5,016,427.
This application Mar. 25, 1991, Ser. No. 665,608
Claims priority, application France, Sep. 6, 1989, 89 11638
Int. Cl.[5] B65B *11/04, 41/16*
U.S. Cl. 53—556 **10 Claims**



1. A carriage for unwinding packaging film and adapted to be incorporated in a packaging machine, said carriage comprising a stand; a supporting shaft for a film reel carried by said stand; a roller device carried by the said stand and comprising two main rollers including upstream and downstream main rollers with parallel axes of rotation and set transversely apart but near to one another to define between them a passage for the packaging film having an entry orifice and an exit orifice, said main rollers simultaneously rotatable about their respective axes in opposite direction by drive means; two film guide rollers including upstream and downstream guide rollers which are respectively associated with the said upstream and downstream main rollers and the axes of rotation of which are parallel to one another and to the axes of rotation of the said main rollers, said upstream and downstream guide rollers being respectively displaceable upstream around the said upstream main roller from a film introductory and temporary initial end position adjacent the said entry orifice to a final end operation position spaced upstream from said initial end position, and downstream around the said downstream main roller from a temporary initial end position adjacent the said exit orifice to a final end operational position spaced downstream from said initial end position, and selectively controlled means carried by the said stand for displacing the said guide rollers from their said temporary initial end positions to their said final end oper-

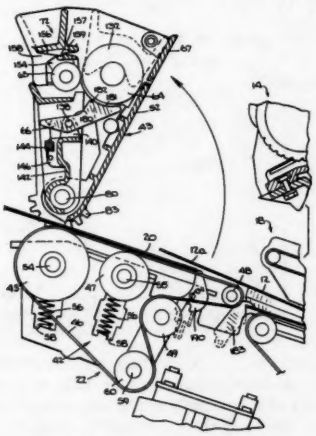
ational positions to feed the film around and lay it against the said upstream and downstream main rollers.

5,081,825

ENVELOPE FLAP UNFOLDER AND ENCLOSURE INSERTER WITH JAM-CLEARING ACCESS

Curtis Mrozinski, Newtown, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 31, 1990, Ser. No. 636,536
Int. Cl.[5] B65B *59/04*
U.S. Cl. 53—569 **16 Claims**



1. Apparatus for inserting enclosures into envelopes, comprising:

flap unfolding means for unfolding the flap of envelope and moving it along a flap unfolding path to an enclosure inserting location in said apparatus

means for holding the flap-unfolded envelope open at said enclosure inserting location;

means for moving an enclosure along an enclosure feed path to the held-open envelope and inserting the enclosure into the held-open envelope;

in a first operating position thereof said flap unfolding means substantially blocking access to said enclosure feed path; and

means for moving only said flap unfolding means away from said first operating position thereof to permit access to said enclosure feed path.

5,081,826

UNIVERSAL SULKY HITCH

Fenton MacKay, R. R. #2, Winsloe, Prince Edward Island, Canada

Continuation-in-part of Ser. No. 365,425, Jun. 13, 1989, abandoned. This application Aug. 3, 1990, Ser. No. 562,857
Int. Cl.[5] B68B *1/00*
U.S. Cl. 54—2 **8 Claims**

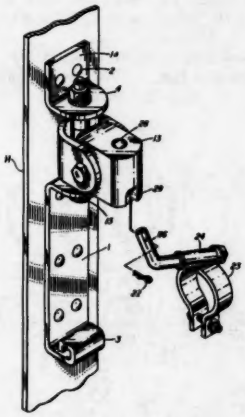
1. A hitch for connecting a shaft of a sulky to a harness of a horse, comprising

at least oen bracket to be affixed to the harness,

a first member mounted on said at least one bracket, said first member being pivotable relative to said at least one bracket about a verticla axis,

a second member mounted on said first member, said second member being pivotable about a horizontal axis relative to said first member, and

means for connecting said second member to a shaft of said sulky,



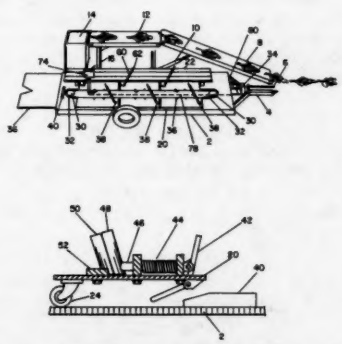
wherein said first member is a yoke having a pair of arms, and said second member is a block pivotably mounted between said arms.

5,081,827

TOBACCO SPEARING SYSTEM

Jerry L. Kennedy, Rte. 1, Box 23, Puryear, Tenn. 38251

Filed Oct. 22, 1990, Ser. No. 600,664
Int. Cl.[5] A01D *45/16*
U.S. Cl. 56—27.5 **11 Claims**



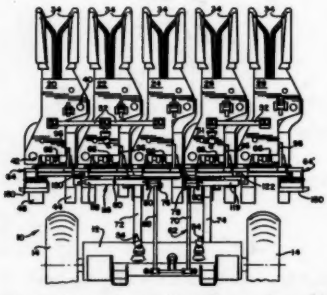
1. Tobacco spearing apparatus comprising a substantially oval circumferentially drivable track having a plurality of substantially flat horizontally positioned plates arranged substantially equidistant apart therearound, each of said plates having a tobacco stickholder affixed thereto positioned so as to hold a tobacco stick upright at angle for spearing tobacco plants thereon, each of said tobacco stickholders having a pair of openable and closable claws each shaped similar to half of a tube so as to hold each stick securely when closed on an end of same, power means for starting, driving and stopping movement of said track and automatic mechanical means for opening and closing said claws.

5,081,828

METHOD OF ACCESSING ADJACENT HARVESTING UNITS OF A COTTON HARVESTER

Michael J. Covington, LaGrange, and Jesse H. Orsborn, Hinsdale, both of Ill., assignors to J. I. Case Company, Racine, Wis.

Continuation-in-part of Ser. No. 436,304, Nov. 13, 1989. This application Dec. 3, 1990, Ser. No. 621,315
Int. Cl.[5] A01D *46/08*
U.S. Cl. 56—28 4 Claims



1. A method of accessing at least three adjacent harvesting units of a cotton harvester while maintaining a minimal length for a tool bar assembly on which the harvesting units are mounted, said method comprising the steps of:

mounting said harvesting units for individualized lateral sliding movements lengthwise along the tool bar assembly between a harvesting position and a service position;

moving at least two adjacent harvesting units as a pair of harvesting units under the influence of powered driver means laterally along the tool bar assembly to a service position to provide access between a remaining harvesting unit and an adjacent harvesting unit of said pair of harvesting units; and

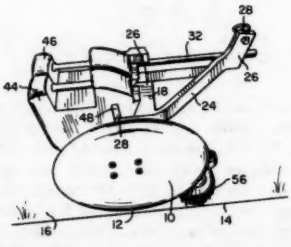
repositioning at least one harvesting unit of said pair of harvesting units in such a manner as to provide access between the harvesting units comprising said pair of harvesting units while maintaining a service position distance between an outermost harvesting unit of said pair of harvesting units similar to that provided for accessing between the remaining harvesting unit and an adjacent pair of said harvesting units.

5,081,829

POWERED EDGER

Walter Grube, 5749 Riverside Dr., Cape Coral, Fla. 33904

Filed Feb. 25, 1991, Ser. No. 660,721
Int. Cl.[5] A01D *34/00*
U.S. Cl. 56—256 9 Claims



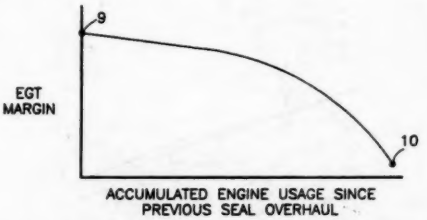
1. In a golf course having driving tees from which the golfers "tee off from" toward greens spaced from the driving tees and where the golfers "hole out, " spaced fairways between each of the driving tees and its associated green, asphalt walkways having edges and central areas leading along the fairways from each driving tee to its associated "green", a rotatable cutting disk adapted to be guided along the edges of the walkways to cut grass and other vegetation along the edges of the walkways, and a rotatable brush having vertically extending bristles in free floating contact with the walkway to pull grass and matted vegetation has been partially cut and direct it towards the center of the walkway.

5,081,830

METHOD OF RESTORING EXHAUST GAS TEMPERATURE MARGIN IN A GAS TURBINE ENGINE

Frederick M. Schwarz; Clifton J. Crawley, Jr., both of Glastonbury, and Anthony F. Rauseo, Middletown, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 25, 1990, Ser. No. 529,088
Int. Cl.[5] F02C *7/12*
U.S. Cl. 60—39.02 15 Claims



1. A method of restoring exhaust gas temperature margin between consecutive periodic seal overhauls in a particular one of a plurality of substantially similar gas turbine engines, each of said gas turbine engines maintained by at least one scheduled interim maintenance operation between said consecutive periodic seal overhauls, said exhaust gas temperature margin being the difference between an exhaust gas temperature and a maximum allowable exhaust gas temperature, each of said plurality of engines having an active clearance control system for selectably reducing the clearance between a plurality of rotating blade tips and a surrounding annular seal, said control system including

valve means, disposed adjacent a portion of the engine structure, for delivering a modulated gas flow, said gas flow having a temperature substantially different than the engine portion, and,

control means, responsive to current engine operating conditions, for causing the valve means to modulate, modulating the flow rate of the delivered gas,

wherein the method comprises the steps of:

determining, for said plurality of similar engines, an average accumulated engine usage and an average engine operating condition at which exhaust gas temperature margin reaches substantially zero;

determining, for said plurality of similar engines, an average minimum flow rate of said gas required to restore exhaust gas temperature margin to a desired exhaust gas temperature margin, the restored exhaust gas temperature margin being no more than an average exhaust gas temperature margin of said plurality of similar engines immediately following said seal overhauls;

determining a minimum valve flow area required to provide said average minimum flow rate at said average engine operating condition;

determining when the exhaust gas temperature margin of said particular one engine deteriorates to a preselected minimum; and,

providing, in the valve means of the particular one engine, a valve flow area no less than said minimum valve flow area at all engine operating conditions.

5,081,831

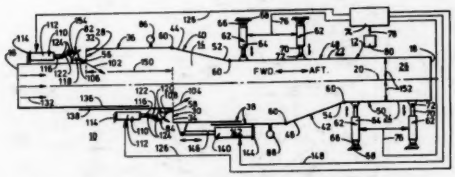
SCRAMJET COMBUSTOR

Daniel L. Harshman, Forest Park, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 327,831, Sep. 26, 1988. This application Oct. 15, 1990, Ser. No. 597,133

Int. Cl.[5] F02K *07/10, 07/14*

U.S. Cl. 60—39.06 **2 Claims**



1. A method for operating a scramjet combustor having a longitudinal axis and two spaced-apart, generally opposing, and generally longitudinally extending walls, with at least one of said walls having an aft-facing step, said combustor also having a fuel injector disposed proximate said step at an acute positive angle with respect to said longitudinal axis, said step having a separation line form during supersonic flight, said shock and separation line being functions of input conditions of inlet Mach number and fuel-air ratio, said method comprising:

(a) sensing a change in any of said input conditions during supersonic flight; and

(b) varying said fuel injector angle during supersonic flight when said change is sensed such that said fuel injector angle is kept generally equal to the angle which said separation line makes with said longitudinal axis.

5,081,832

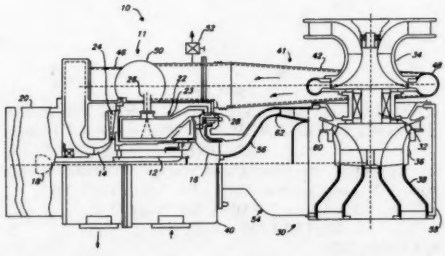
HIGH EFFICIENCY, TWIN SPOOL, RADIAL-HIGH PRESSURE, GAS TURBINE ENGINE

Rolf J. Mowill, Rugdeveien 7, 0386 Oslo, 3, Norway, assignor to Rolf Jan Mowill, Oslo, Norway

Continuation of Ser. No. 488,138, Mar. 5, 1990, abandoned. This application Jun. 28, 1991, Ser. No. 724,476

Int. Cl.[5] F02C *3/05*

U.S. Cl. 60—39.161 **18 Claims**



1. A high-efficiency, twin spool gas turbine engine for driving an external load, the engine comprising:

a high pressure spool having shaft means, and a centrifugal compressor and a radial in-flow turbine mounted on said shaft means, said radial in-flow turbine having an expansion ratio of about 4/1 to 8/1;

means connected to said shaft means for driving essentially the entire external load from said high pressure spool shaft means;

combustion means associated with said high pressure spool for receiving compressed air from said centrifugal compressor, for combusting fuel using the compressed air, and for delivering the combustion gases and all the combustion heat energy to said radial in-flow turbine under all engine load conditions;

a low pressure spool having shaft means; and low pressure compressor means and low pressure turbine means mounted on said low pressure spool shaft means, said low pressure spool being rotatably independent from said high pressure spool and being essentially load-free;

first means for flow interconnecting said low pressure compressor means and said high pressure centrifugal compressor for supplying precompressed air thereto; and

second means for flow interconnecting said high pressure radial in-flow turbine means and said low pressure turbine means for supplying partially expanded combustion gases thereto, wherein the expansion ratio across the radial in-flow turbine is greater than the expansion ratio across the low pressure turbine.

5,081,833

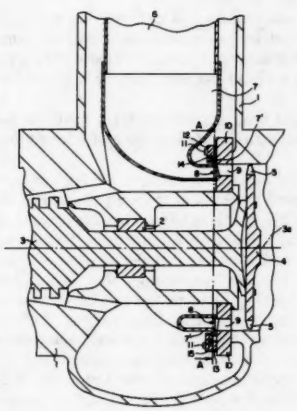
DEVICE FOR KEEPING THE ANNULAR OUTLET MOUTH OF THE GAS VOLUTE ALWAYS CENTERED ABOUT THE NOZZLE ASSEMBLY IN A GAS TURBINE

Vasco Mezzedimi, Siena, and Franco Frosini, Florence, both of Italy, assignors to Nuovopignone-Industrie Meccaniche e Fonderia S.p.A., Florence, Italy

Continuation of Ser. No. 339,000, Apr. 17, 1989, abandoned. This application Dec. 3, 1990, Ser. No. 622,181

Int. Cl.[5] F02C *7/32*

U.S. Cl. 60—39.32 **1 Claim**



1. A device for centering an annular outlet mouth of a gas volute relative to a nozzle assembly in a gas turbine wherein the nozzle assembly has a nozzle support ring surrounding the annular outlet mouth, comprising:

a) a first retaining diametrically divided ring attached to the nozzle support ring, wherein said first retaining ring has an outer radius and an inner radius; and

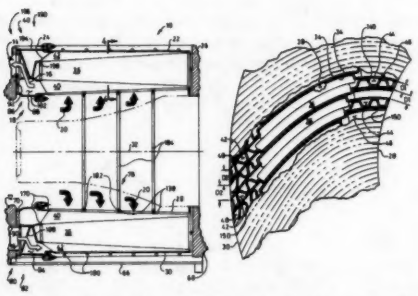
b) a second retaining diametrically divided ring attached to the nozzle support ring, wherein said second retaining ring has an outer radius and an inner radius, wherein said outer radius of said second retaining ring is equal to said outer radius of said first retaining ring and said inner radius of said second retaining ring is greater than said inner radius of said first retaining ring thereby forming a gap wherein said gap is effective to compensate for differential expansion between the annular outlet mouth and the nozzle support ring.

5,081,834

CIRCULAR HEAT EXCHANGER HAVING UNIFORM CROSS-SECTIONAL AREA THROUGHOUT THE PASSAGES THEREIN

Charles T. Darragh, San Diego, Calif., assignor to Solar Turbines Incorporated, San Diego, Calif.

Filed May 29, 1990, Ser. No. 530,957
Int. Cl.[5] F02C 7/10
U.S. Cl. 60—39.511 14 Claims



1. A heat exchanger comprising a core having a plurality of heat recipient passages and a plurality of heat donor passages therein, the heat recipient passages having a recipient fluid therein during operation and the heat donor passages having a donor fluid therein during operation, further comprising:

said core including a plurality of stacked primary surface cells each defining one of the passages therein, the cells being secured together forming a generally circular core, adjacent cells forming the other of the passages therebetween;

each of said plurality of cells having an involute curved shape and including at least a pair of primary surface pleated sheets, each of said primary surface pleated sheets having a center portion defining a generally trapezoidal shape;

each of said heat recipient passages having a uniform cross-sectional area throughout the entire length of the passage; and

each of said heat donor passages having a uniform cross-sectional area throughout the entire length of the passage.

8. A gas turbine engine including a compressor section being in fluid connection with a combustor further being in fluid connection with a power turbine, an exhaust system having a donor fluid passing therethrough after exiting from the combustor and passing through the power turbine, an air intake system having a recipient fluid passing therethrough after exiting from the compressor, a heat exchanger disposed in fluid communication with the exhaust system and the air intake system and including a core having a plurality of heat recipient passages, through which the recipient fluid passes, and a plurality of heat donor passages, through which the donor fluid passes therein and a housing surrounding the core, said heat exchanger further comprising:

said core including a plurality of stacked primary surface cells each defining one of the passages therein, the cells being secured together forming a generally circular core, adjacent cells forming the other of the passages therebetween;

each of said plurality of cells having an involute curved shape and including at least a pair of primary surface pleated sheets, each of said primary surface pleated sheets having a center portion defining a generally trapezoidal shape;

each of said heat recipient passages having a uniform cross-sectional area throughout the entire length of the passage; and

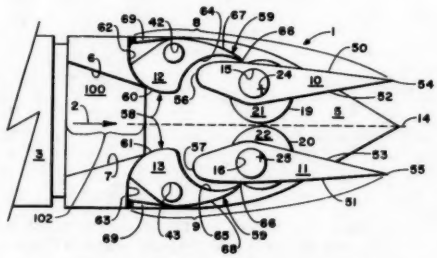
each of said heat donor passages having a uniform cross-sectional area throughout the entire length of the passage.

5,081,835

ECCENTRIC FLAP NOZZLE

Joseph H. Ewing, Jr., Lake Park, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 12, 1990, Ser. No. 597,937
Int. Cl.[5] F02K 1/00
U.S. Cl. 60—230 13 Claims



1. A two-dimensional thrust vectoring exhaust nozzle for a gas turbine engine, the nozzle comprising:

a static structure having first and second laterally spaced apart sidewalls, each of the sidewalls having an inner surface defining lateral exhaust boundaries in the nozzle;

upper and lower movable flap assemblies, each flap assembly including a vectoring flap extending between the first and second sidewalls, the vectoring flap connected solely to a first shaft having ends which protrude into the sidewalls through pivot shaft holes in pivot members rotatably mounted in the sidewalls, the pivot shaft hole of each pivot member eccentric to the center of rotation thereof, each vectoring flap fixedly secured to the first shaft therein to prevent relative movement therebetween, and means for directing exhaust gas exteriorly of each vectoring flap; and,

means for selectively positioning the vectoring flaps.

5,081,836

OXYGEN SUPPLY SYSTEM FOR A REGENERABLE PARTICULATE FILTER ASSEMBLY OF A DIESEL ENGINE

Aaron L. Smith, East Peoria, and Mark E. Feldman, Edelstein, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

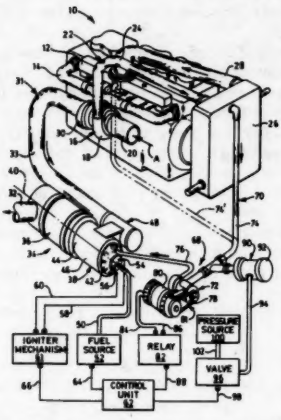
Filed Dec. 24, 1990, Ser. No. 633,564
Int. Cl.[5] F02B 37/00; F01N 3/02
U.S. Cl. 60—280 11 Claims

1. An oxygen supply system for use with an internal combustion engine having an inlet manifold, an exhaust manifold, a supercharger, first passage means for communicating pressurized air from the supercharger to the inlet manifold, and second passage means for communicating exhaust gas from the supercharger to the atmosphere including a particulate filter assembly, comprising:

third passage means for controllably communicating a portion of the pressurized air from the first passage means to the particulate filter assembly; and

auxiliary pump means for aiding in the delivery of a volumetric rate of pressurized air through the third passage means solely from the first passage means and assuring

with the exhaust gas in the second passage means sufficient oxygen to sustain regeneration of the particulate filter assembly through the full range of operating conditions of the engine.

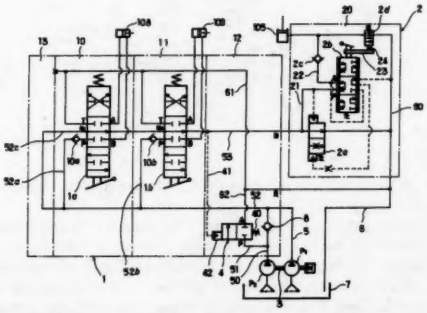


5,081,837

HYDRAULIC CONTROL CIRCUIT

Katsumi Ueno, Saitama, Japan, assignor to Diesel KIKI Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1989, Ser. No. 329,674
Claims priority, application Japan, Apr. 8, 1988, 63-46812
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—421 **8 Claims**



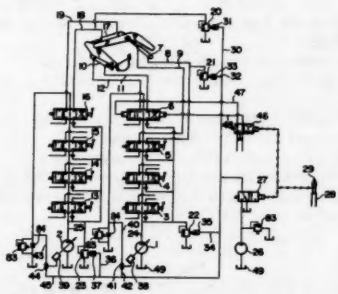
1. A hydraulic circuit for controlling a main hydraulic actuator **105** adapted to drive a farm operation machine mounted on an agricultural tractor and auxiliary hydraulic actuators adapted to drive farm attachment operation machine independent of said farm operation machine; said hydraulic control circuit comprising in combination a first hydraulic pump (P_1), a second hydraulic pump (P_2), said first and second pumps being adapted to be coaxially driven by one power source, said first hydraulic pump delivering fluid under pressure to a common pump passage **52** through which said fluid travels to a first control valve group **(1)**, and thereafter to a second control valve group **(2)**, each of said control valve groups being provided with at least one switch valve respectively, said first control valve group **(1)** being for the auxiliary hydraulic actuators, and said second control valve group **(2)** being for the main hydraulic actuator; said second hydraulic pump delivering fluid under pressure to a delivery passage **(50)** said delivery passage **(50)** communicating with said common pump passage **(52)** via a check valve **(8)**; an openable valve **(4)** comprising a spring-offset-type two-position switching valve, said openable valve **(4)** having an intake port (P) connected to the delivery passage **(50)** via a branch passage **(51)**, and an exit port (A) connected to a tank passage **(61)** of the first control valve group **1** through a bypass line **(62)**, said openable valve **(4)** having a pressure chamber **(42)** at one side thereof and an offset spring **(40)** at the opposite side thereof, said pressure chamber **(42)** being connected, via a pilot passage **(41)**, to a communication passage **(53)** between the first control valve group **(1)** and the second control valve group **(2)**; said openable valve **(4)** being actuated by pressure introduced into the pressure chamber **(42)** from the downstream side of the first control valve group **(1)**, and when only the second control valve group **(2)** is operated, the discharge amount of the second hydraulic pump (P_2) is not united with the discharge amount of the first hydraulic pump (P_1), but only when the first control valve group **(1)** is operated, the discharge amount of the second hydraulic pump (P_2) is united with the discharge amount of the first hydraulic pump (P_1).

5,081,838

HYDRAULIC CIRCUIT WITH VARIABLE RELIEF VALVES

Satoshi Miyaoka, and Masaaki Tachinoh, both of Hiroshima, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 28, 1989, Ser. No. 329,823
Int. Cl.[5] F16D *31/02*; E02F *5/02*
U.S. Cl. 60—444 **2 Claims**



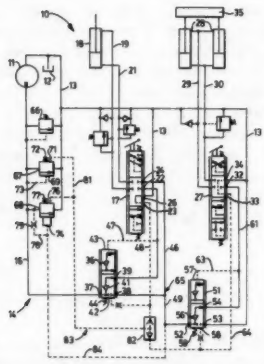
1. A hydraulic circuit for a hydraulic shovel, comprising:
a variable displacement hydraulic pump;
selector valve for selectively transmitting hydraulic fluid from said hydraulic pump;
actuators for actuating said shovel and communicated with said selector valves such that hydraulic fluid from said hydraulic pump may be delivered to said actuators via said selector valves;
at least one variable relief valve provided in a discharge oil passage of said variable displacement hydraulic pump at a fluidic position between said hydraulic pump and said selector valves and also provided in input oil passages of at least one of said actuators;
a pilot hydraulic pump communicated with said variable relief valves through pilot oil passages;
a solenoid valve provided in one of said pilot oil passages for changing set pressures of said variable relief valves;
a regulator for controlling a discharge quantity of said variable displacement hydraulic pump; and
a pilot oil passage for communicating said solenoid valve with said regulator so as to control a discharge quantity of said hydraulic pump by operation of said solenoid valve, according to the pressure of said pilot pump and independent of a discharge pressure of said variable displacement hydraulic pump.

5,081,839

PRESSURE COMPENSATED HYDRAULIC SYSTEM

O. Dean McWilliams, Morris, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Jan. 29, 1990, Ser. No. 471,565
Int. Cl.[5] F16D 31/02
U.S. Cl. 60—468 11 Claims



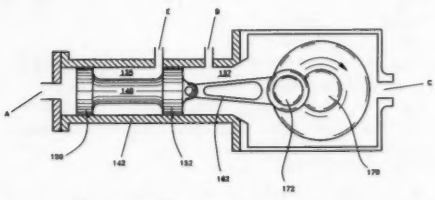
1. A hydraulic control system comprising:
a pump;
supply conduit means connected to the pump;
an unloading valve connected to the supply conduit means and being movable between open and closed positions, said valve having first and second ends and a spring disposed at the first end and biasing the valve to the closed position;
a directional control valve having an inlet port;
means for connecting the supply conduit means to the inlet port;
a pilot passage connecting the supply conduit means with the second end of the unloading valve;
an orifice disposed in the pilot passage; and
a control passage connecting the connecting means with the pilot passage between the orifice and the second end of the unloading valve.

5,081,840

SPOOL VALVE AND PISTON POWER PLANT

Hank A. Landon, 4412 Mayflower La., Las Vegas, Nev. 89107

Filed Jan. 9, 1990, Ser. No. 462,646
Int. Cl.[5] F01B 1/06, 13/14
U.S. Cl. 60—500 18 Claims



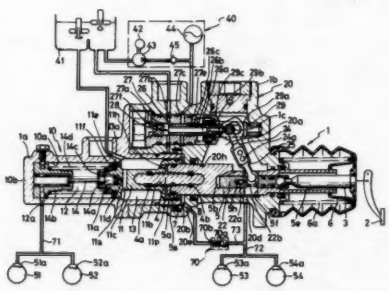
16. An engine comprising:
a) a plurality of cylinders each containing a piston disposed therein for reciprocating movement,
b) a crankshaft connected to one end of each piston,
c) a drive shaft connected to an end of the crankshaft,
d) a source of pressurized fluid connected by conduits to each cylinder,
e) each piston comprising:
1) a first sealing member acting as the piston head,
2) a second sealing member acting as the bottom of the piston whereby an upper fluid chamber is defined between the first sealing member and the second sealing member,
f) an arm connected at one end thereof to the bottom of the piston and connected at the other end thereof to the crankshaft,
g) a lower fluid chamber formed by the bottom of the piston and a housing surrounding the arm and the crankshaft,
h) a first port associated with each cylinder for delivering pressurized fluid to the head of the piston,
i) a second port associated with each cylinder for removing pressurized fluid selectively from the upper chamber or delivering pressurized fluid to the lower chamber,
i) a third port for removing pressurized fluid from the lower chamber, and
j) a fourth part connected to the source of pressurized fluid and associated with each cylinder for delivering pressurized fluid to the upper chamber whereby the reciprocating movement of each piston is translated into rotary movement of the drive shaft through the crankshaft.

5,081,841

HYDRAULIC BRAKING SYSTEM WITH SECOND BOOSTER CHAMBER

Michiharu Nishii, Toyota City, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

Filed Sep. 26, 1990, Ser. No. 588,183
Claims priority, application Japan, Sep. 30, 1989, 1-256849
Int. Cl.[5] F15B 7/00
U.S. Cl. 60—56 11 Claims



1. A hydraulic braking system for an automotive vehicle comprising:
a power source for generating a hydraulic power pressure;
a reservoir for storing an amount of brake fluid;
a master cylinder having a bore defined therein and a master piston slidably disposed in said bore for introducing said brake fluid into said bore from said reservoir and generating a hydraulic braking pressure in response to operation of a manually-operated member;
a hydraulic booster having a housing defining therein a first boost chamber and a power piston slidably supported in said housing for actuating said master cylinder with said hydraulic power pressure supplied into said first boost chamber from said power source in response to operation of said manually-operated member, said hydraulic booster defining therein a second boost chamber separated from said first boost chamber by said power piston and connected with said first boost chamber through a hydraulic circuit for introducing a hydraulic pressure from said first boost chamber and actuating said master piston independently of said power piston, said master piston having a large-diameter land portion and a small-diameter land portion, and said bore being formed of a stepped bore having a large-diameter portion and small-diameter portion corresponding to each of said land portions, said master piston having an opening formed on an end face of

said large-diameter land portion extending axially toward a center of said master piston for receiving therein power piston fluid-tightly and slidably, and said second boost chamber being defined around said power piston so that the end face of said large-diameter land portion of said master piston faces said second boost chamber;

valve means disposed in said hydraulic circuit between said first boost chamber and said second boost chamber for controlling the communication therebetween; and

a plurality of wheel brake cylinders communicated with at least said master cylinder for braking respective road wheels.

5,081,842

INTERNAL COMBUSTION ENGINE WITH A DUAL TURBOCHARGER SYSTEM

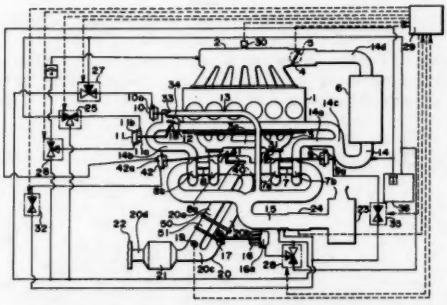
Toshihisa Sugiyama, Gotenba; Mamoru Yoshioka, Susono; Kunihiko Nakata, Susono; Takashi Miyake, Aichi, and Toru Kidokoro, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Oct. 24, 1990, Ser. No. 602,664

Claims priority, application Japan, Oct. 23, 1989, 1-273803; Mar. 26, 1990, 2-29586[U]

Int. Cl.[5] F02B *37/12*

U.S. Cl. 60—612 **19 Claims**



1. An internal combustion engine with a dual turbocharger system, comprising:

a multi-cylinder internal combustion engine with an air intake and at least one exhaust outlet, cylinders of the engine being grouped into two groups;

an exhaust manifold connected with the engine exhaust outlet, the exhaust manifold including a first portion connected to one group of the cylinders and a second portion connected to another group of the cylinders, the first portion and the second portion of the exhaust manifold communicating with each other by a connecting conduit;

a first turbocharger and a second turbocharger arranged in parallel with each other with respect to the engine, each including a turbine and a compressor driven by the turbine, the compressors being connected with the air intake of the engine and the turbines being connected with the exhaust outlet of the engine via the exhaust manifold;

an exhaust line including a first exhaust conduit connected with the first portion of the exhaust manifold, in which the turbine of the first turbocharger is installed, a second exhaust conduit connected with the second portion of the exhaust manifold, in which the turbine of the second turbocharger is installed, an exhaust connecting portion where the first exhaust conduit and the second exhaust conduit join each other, and an exhaust pipe located downstream of and connected with the exhaust connecting portion;

an exhaust switching valve installed downstream of the turbine of the second turbocharger in the second exhaust conduit and adapted to open and close the second exhaust conduit;

an exhaust bypass conduit connecting a portion of the second exhaust conduit downstream of the turbine of the second turbocharger and upstream of the exhaust switching valve with any one of a portion of the second exhaust conduit downstream of the exhaust switching valve, the exhaust connecting portion and a portion of the first exhaust conduit downstream of the turbine of the first turbocharger; and

an exhaust bypass valve installed in the exhaust bypass conduit and adapted to open and close the exhaust bypass conduit.

5,081,843

COMBUSTOR FOR A GAS TURBINE

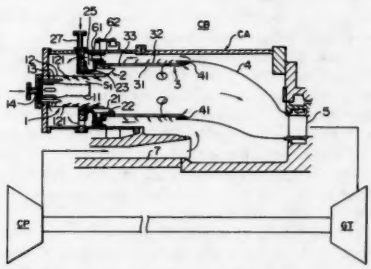
Yoji Ishibashi; Takashi Ohmori, both of Hitachi; Fumio Kato, Ibaraki; Michio Kuroda, and Nobuyuki Iizuka, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 177,429, Apr. 1, 1988, abandoned. This application Oct. 19, 1989, Ser. No. 423,749

Claims priority, application Japan, Apr. 3, 1987, 62-80959

Int. Cl.[5] F02C *3/04*; F23R *3/30, 3/34*

U.S. Cl. 60—733 **11 Claims**



1. A combustor cooperating with a compressor means in driving a gas turbine means, the combustor comprising:

a primary combustion chamber means including an inner tube means and an outer tube means surrounding said inner tube means to define an annular space therebetween for receiving fuel from said fuel injection means;

pre-mixing chamber means disposed axially downstream of and communicating with said primary combustion chamber means, said pre-mixing chamber means being defined by an inner chamber wall means and an outer chamber wall means surrounding said inner chamber wall means with a plurality of fuel injection means extending into said pre-mixing chamber means to supply fuel thereto;

a main combustion chamber means disposed axially downstream of and communicating with said pre-mixing chamber means, said main combustion chamber means including an inner cylindrical wall means and an outer cylindrical wall means arranged so as to define therebetween an annular air passage means communicating with said pre-mixing chamber means to supply air thereto for increasing an amount of combustion air supplied to the pre-mixing chamber means thereby enabling an increased fuel supply by the plurality of fuel injection means to the pre-mixing chamber means to reduce an amount of NOx generated during a combustion of a pre-mixture in the pre-mixing chamber means; and

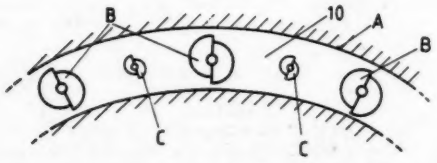
a radial gap between the inner cylindrical wall means and an outer cylindrical wall means forming the annular air passage means increases gradually outwardly to an upstream side of a flow direction of combusted gas resulting from the combustion.

5,081,844

COMBUSTION CHAMBER OF A GAS TURBINE

Jakob Keller, Dottikon, and Thomas Sattelmayer, Mandach, both of Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Mar. 2, 1990, Ser. No. 487,112
Int. Cl.[5] F02C *1/00*; F23R *3/46, 3/30*
U.S. Cl. 60—737 5 Claims



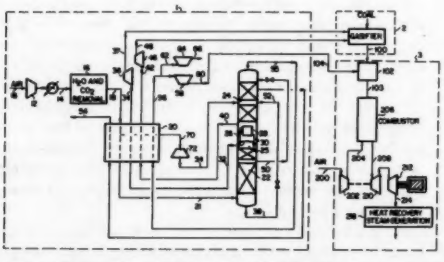
1. A combustion chamber of a gas turbine comprising:
an annular inlet flow end;
a plurality of premix burners positioned adjacent each other around a circumference of said inlet flow end, each of said premix burners being directed in the same swirl direction;
said plurality of premix burners including large premix burners and small premix burners according to an amount of air directed through each of said burners;
each of said small premix burners being positioned between two of said large premix burners;
each of said premix burners including at least two hollow part conical bodies positioned together to form a burner interior that has a cone inclination increasing in a flow direction, said bodies positioned together such that center longitudinal axes of said bodies are offset from each other;
each of said premix burners having tangential air inlet slots for introducing combustion air into the interior of said burner body, said air inlet slots extending substantially the length of said burner body;
a nozzle for supplying a conical column of fuel within said burner body substantially along the length of said burner body, said nozzle having means for injecting fuel disposed at a location between said offset longitudinal axes of said part conical bodies.

5,081,845

INTEGRATED AIR SEPARATION PLANT - INTEGRATED GASIFICATION COMBINED CYCLE POWER GENERATOR

Rodney J. Allam, Guilford, and Anthony Topham, Walton on Thames, both of England, assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 2, 1990, Ser. No. 547,570
Int. Cl.[5] F25J *3/02*
U.S. Cl. 62—24 5 Claims



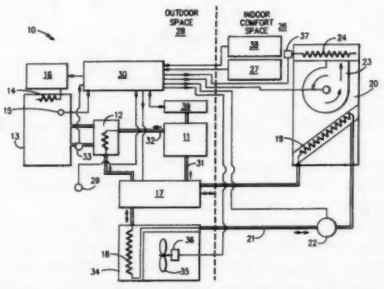
1. An integrated gasification combined cycle power generation system comprising an air separation unit wherein air is compressed, cooled, and separated into an oxygen and nitrogen enriched fractions, a gasification system for generating a fuel gas, an air compressor system for supplying compressed air for use in combusting said fuel gas, a combustion zone for effecting combustion of said compressed air and said fuel gas, and a gas turbine for effecting the generation of power from the resulting combusted gases from said combustion zone in said combined cycle power generation system which comprises:
a) independently compressing feed air to the air separation unit to pressures of from 8 to 20 bar from the compressor system used to compress air for said combustion zone;
b) cyrogenically separating the air in said air separation unit having at least one distillation column operating at pressures of between 8 and 20 bar and producing an oxygen enriched fraction consisting of low purity oxygen, and;
c) utilizing at least a portion of said low purity oxygen for effecting gasification of a carbon containing fuel source by partial oxidation in said gasification system and thereby generating a fuel gas stream;
e) removing at least a portion of a nitrogen enriched fraction from said air separation unit and boosting its pressure to a pressure substantially equal to that of the fuel gas stream; and
f) expanding at least another portion of the nitrogen enriched fraction in an expansion engine.

5,081,846

CONTROL OF SPACE HEATING AND WATER HEATING USING VARIABLE SPEED HEAT PUMP

Kevin F. Dudley, Cazenovia; Kevin B. Dunshee, Syracuse, and Lowell Paige, Penneville, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 21, 1990, Ser. No. 586,130
Int. Cl.[5] F25B *27/00*
U.S. Cl. 62—115 3 Claims



1. In an integrated heating system for simultaneously heating a space and hot water including a compressor with a variable speed drive for compressing a heat transfer fluid, the compressor having a suction port and a discharge port, a water heat exchanger and indoor heat exchanger operatively connected in serial arrangement to the discharge port of the compressor, an outdoor heat exchanger operatively connected to the suction port of the compressor, and expansion device operatively connected to the indoor and outdoor heat exchangers, the indoor and outdoor heat exchangers each having a variable speed fan associated therewith for moving air over each heat exchanger for transferring heat to and from the heat exchangers, a thermostat device for presetting a desired space temperature and comparing the desired space temperature to the actual space temperature for determining a space heating load, and a controller having outputs for controlling the speed of the compressor variable speed drive and the indoor variable speed fan, and inputs for receiving signals from the thermostat device for the space heating load, from the indoor variable speed fan for the speed of the indoor fan, and from an outdoor air tem-

perature sensor for the outdoor air temperature, a method of operating the heating system comprising the steps of:

sensing the space heating load for the space to be heated;

controlling the speed of the variable speed indoor fan in response to the space heating load;

sensing the outdoor temperature;

comparing said outdoor temperature with said space heating load;

controlling the speed of the compressor variable speed drive as a predetermined function of said outdoor temperature and said space heating load; and

limiting the operation of the the expansion valve as a predetermined function of said outdoor temperature and the speed of the compressor variable speed drive.

5,081,847

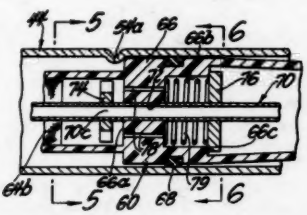
VARIABLE FLOW ORIFICE TUBE

Russell C. Anderson, Jr., N. Tonawanda, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 24, 1990, Ser. No. 588,622

Int. Cl.[5] F25B *41/04*

U.S. Cl. 62—222 **10 Claims**



2. A variable orifice restrictor valve for controlling refrigerant flow in an automobile air conditioning system wherein the valve has an outer housing with an inlet end adapted to be connected to the outlet of a refrigerant condenser having refrigerant supplied thereto by a compressor driven by the automobile engine and the outer housing further including an outlet end adapted to be connected to the inlet of a refrigerant evaporator having an outlet connected to the compressor and wherein a valve body is supported in the housing having an upstream part always in communication with the inlet end, a downstream part always in communication with the outlet end and an intermediate part having a first flow path for producing a controlled restriction of flow between the inlet end and the outlet end characterized by:

means for forming a first flow path for restricting flow through said intermediated part which is in communication with the upstream and downstream parts of said valve body;

means for forming a second flow path for restricting flow including an orifice tube slideably fit within said intermediate part for axial movement relative thereto;

said orifice tube having opposite open ends one of which is located within the upstream part of said valve body and the other of which is located within the downstream part of said valve body and said orifice tube being continuously open for flow of refrigerant between the inlet end and the outlet end of the housing; and

valve means fixedly secured to said orifice tube for movement therewith and responsive to pressure differential between the inlet end and the outlet end of the housing for producing a force on said orifice tube to cause movement of said orifice tube to position said valve means to open and close said first flow path for varying refrigerant flow between the inlet end and the outlet end of the housing;

said valve means including valve disk means selectively engageable with said intermediate part for opening and closing said first flow path for varying refrigerant flow between the inlet end and the outlet end of the housing.

5,081,848

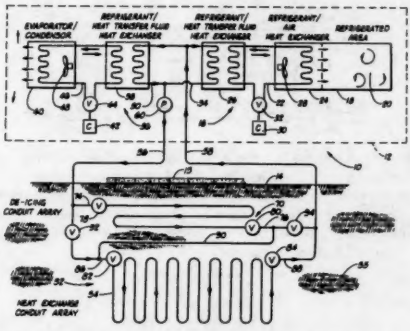
GROUND SOURCE AIR CONDITIONING SYSTEM COMPRISING A CONDUIT ARRAY FOR DE-ICING A NEARBY SURFACE

John P. Rawlings, 2636 SW. 90th Pl., Oklahoma City, Okla. 73159, and Michael E. Albertson, 11920 Skyway Ave., Oklahoma City, Okla. 73162

Filed Nov. 7, 1990, Ser. No. 610,187

Int. Cl.[5] F25B *27/00, 29/00*

U.S. Cl. 62—260 **21 Claims**



12. A ground source air conditioning system for a structure having an associated surface to be de-iced, the system comprising

an air conditioning assembly for refrigerating the air inside a substructure associated with the structure, wherein the air conditioning assembly is characterized by circulation of a refrigerant between a refrigerant/heat transfer fluid heat exchanger and a refrigerant/air heat exchanger;

a ground source heat exchanger for maintaining the heat transfer fluid near ground temperature;

means for circulating water between the ground source heat exchanger and the refrigerant/heat transfer fluid heat exchanger;

a de-icing conduit array positioned near the surface to be de-iced s that heat from the heat transfer fluid in the de-icing conduit array is transmitted to the surface; and

means for circulating water between the refrigerant/heat transfer fluid heat exchanger and the de-icing conduit array.

5,081,849

ASSEMBLY METHOD AND CONSTRUCTION FOR A ROOM AIR CONDITIONER

Christopher M. Thompson, Smyrna; Timothy J. Campbell, Nashville, and Billy P. Gipson, Marshall County, all of Tenn., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 11, 1990, Ser. No. 522,180

Int. Cl.[5] F25D *23/12*

U.S. Cl. 62—262 **13 Claims**

1. A room air conditioner comprising:

a base plate having a plurality of vertically oriented fastening means projecting upwardly therefrom;

a compressor having means thereon for vertically receiving a plurality of said fastening means;

a condenser assembly including means thereon for vertically receiving a plurality of said fastening means;

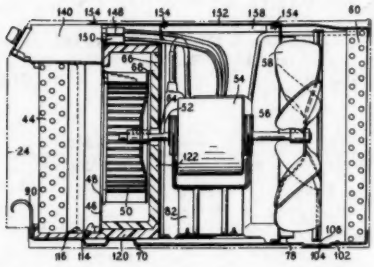
an evaporator assembly including means thereon for vertically receiving a plurality of said fastening means;

a control assembly having means thereon for vertically receiving a plurality of vertically oriented fastening means to secure said control assembly to a top of said evaporator assembly;

a barrier wall separating said evaporator assembly and said

condenser assembly having means thereon for vertically receiving one of said fastening means;

a motor mount having means thereon for vertically receiving a plurality of said fastening means;



said motor mount having a pair of upwardly opening yokes for receiving a motor in a vertical manner; wherein said base plate, condenser assembly, evaporator assembly, compressor, control assembly, barrier wall, motor mount, and motor are all interconnected by means of vertically oriented fastening means.

5,081,850

REFRIGERATOR

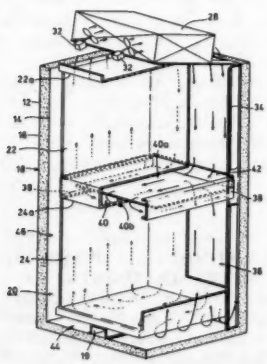
Yuji Wakatsuki; Shigekazu Kondo; Mitsuyuki Takaoka; Masaru Hirosawa, and Nobuya Suzuki, all of Toyoake, Japan, assignors to Hoshizaki Denki Kabushiki Kaisha, Aichi, Japan

Filed May 22, 1990, Ser. No. 527,127

Claims priority, application Japan, May 25, 1989, 1-133764; Jun. 7, 1989, 1-66366[U]

Int. Cl.[5] F25D *17/08*

U.S. Cl. 62—405 **4 Claims**



1. A refrigerator comprising a thermal insulating box provided with openings and thermal insulating doors arranged in the openings; storing boxes arranged within said thermal insulating box through a predetermined space and having openings released in correspondence with said openings; and a cooling unit arranged above one of the storing boxes in said thermal insulating box characterized in that:

an interior space of said thermal insulating box is divided into a first passage communicating with a cold air blowing side of the cooling unit so as to guide the cold air blown from said cooling unit to cool said storing boxes with falling cold air, and a second passage communicating with the cold air sucking side of the cooling unit to cool the storing boxes with raising cold air which has descended down to the bottom part of said thermal insulating box and to guide it to return to the cooling unit; and

said first passage and second passage communicate with each other below said storing box, the first passage being defined at a rear side of the storing box and the second passage being defined at side surfaces of the storing box.

5,081,851

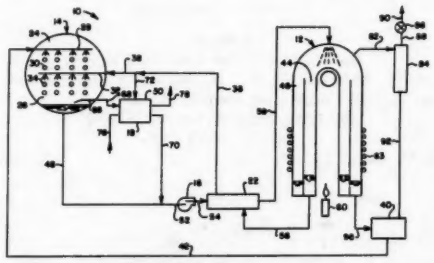
ABSORPTION REFRIGERATION SYSTEM PURGE SUBSYSTEM

Joseph G. Murray, Worthington, Ohio, assignor to Gas Research Institute, Chicago, Ill.

Filed Apr. 18, 1991, Ser. No. 687,130

Int. Cl.[5] F25B *43/04, 15/00*

U.S. Cl. 62—475 **6 Claims**



1. An absorption refrigeration system with a gas purge system comprising:

a.) Absorber means functioning at a sub-atmospheric operating pressure and separating un-wanted, non-condensed gases from refrigeration solution;

b.) generator means functioning at an operating pressure substantially greater than atmospheric pressure and separating refrigerant vapor and un-wanted, non-condensed gases from refrigeration solution;

c.) purge pump means receiving un-wanted, non-condensed gases from said absorber means at a pressure less than said absorber means sub-atmospheric operating pressure;

d.) solution pump means receiving refrigeration solution from said absorber means and un-wanted, non-condensed gases from said purge pump means and flowing received gases and refrigeration solution to said generator means;

e.) collector means receiving un-wanted, non-condensed gases from said generator means at an operating pressure corresponding to said generator means operating pressure; and

f.) vent means venting said un-wanted, non-condensed gases from said collector means to the atmosphere at a venting pressure corresponding to said generator means operating pressure.

5,081,852

DISPLAY BRACELET

Michael F. Cox, 3499 Oaks Way, Pompano Beach, Fla. 33069

Filed Feb. 14, 1991, Ser. No. 656,000

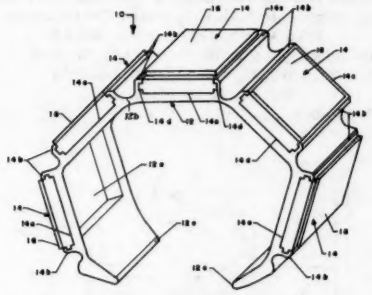
Int. Cl.[5] A44C *5/00*

U.S. Cl. 63—3 **7 Claims**

1. An ornamental bracelet for use as an article of jewelry comprising:

an arcuately shaped molded band of a transparent plastic material sized and shaped to be received around the wrist of the wearer, said arcuate band body comprising a first molded inside surface wall arcuately shaped having a pair of free ends spaced apart, said arcuately shaped band body including a plurality of compartments comprised of three walls rising upwardly from the upper surface of said band, each compartment having a slidably removable transparent optically clear window panel and a flat surface, each of said compartments having sufficient space to fit a pair of thin indicia bearing sheets, whereby said indicia bearing

sheets can be placed back to back to provide visible individual display exhibits of photographs, pictures or holograms that are visible outwardly and inwardly relative to said band.



5,081,853

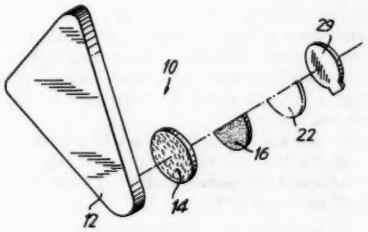
ADHESIVELY SECURABLE POSTLESS EARRING

Amy L. Salyer, Warrenville, Ill., assignor to Ear Resistible Ideas, Inc., Warrenville, Ill.

Continuation of Ser. No. 513,213, Apr. 23, 1990, abandoned. This application Mar. 18, 1991, Ser. No. 671,025

Int. Cl.[5] A44C *7/00*

U.S. Cl. 63—12 **5 Claims**



1. A postless and clipless earring and associated multiple mechanisms for reusably securing the earring to an ear comprising:

a decorative jewelry ornament portion having a back portion which is substantially flat and thereby defining that portion of the earring intended to be secured to the ear;

a thermal insulative and flexible felt-like backing layer, fixedly secured to said back portion, said backing layer providing heat and material insulation between said back portion and the ear upon which it is intended to be worn; and

said associated multiple mechanisms comprising selectively replaceable earring securing means for holding, in a selectively removable fashion, said earring to an ear, each of said securing means comprising a two-sided adhesive layer, each side originally provided with a sheet of release paper, the removal of the first of said sheets of release paper thereby exposing a first side of said two-sided adhesive layers, and providing the means for removably securing said securing means to said backing layer, and the selective removal of the second sheet of said release paper thereby exposing a second side of said two-sided adhesive layer and providing the means for removably securing said earring to an ear.

5,081,854

PROCESS FOR MANUFACTURING A SEMI-FINISHED PRODUCT WITH CIRCULAR KNITTING MACHINES, IN PARTICULAR FOR PRODUCING UNDERSHIRTS, ONE-PIECE BODY GARMENTS, BRIEFS OR THE LIKE

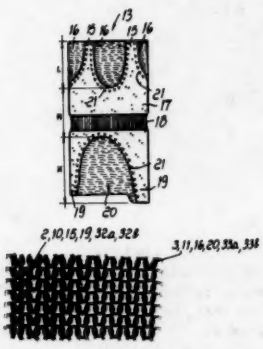
Francesco Lonati, Brescia, Italy, assignor to Lonati S.p.A., Brescia, Italy

Filed Mar. 5, 1990, Ser. No. 489,129

Claims priority, application Italy, Mar. 16, 1989, 19791 A/89

Int. Cl.[5] A41B *9/04, 9/06*; D04B *1/24*

U.S. Cl. 66—176 **20 Claims**



1. A process for manufacturing a semi-finished product with circular knitting machines, in particular for producing undershirts, one-piece body garments, and briefs, comprising the steps of

manufacturing a knitted body defining a substantially tubular extension and having;

portions which are to be removed, and

a remaining body part, the improvement comprising

knitting said remaining body part throughout with a first quantity of yarns, and

knitting said portions which are to be removed with a second quantity of yarns, said second quantity of yarns being less than said first quantity of yarns,

whereby to achieve a saving in the quantity of discarded yarn used for manufacturing the portions which are to be removed.

5,081,855

SLIDE FASTENER LOCK ASSEMBLY

Yasuharu Terada, Uozu, and Yoshiyuki Horita, Toyama, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

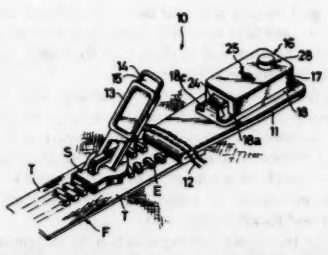
Filed Jun. 15, 1990, Ser. No. 538,782

Claims priority, application Japan, Jun. 16, 1989, 1-70994[U]

The portion of the term of this patent subsequent to Jun. 5, 2007, has been disclaimed.

Int. Cl.[5] E05B *67/38*

U.S. Cl. 70—68 **13 Claims**



1. A slide fastener lock assembly comprising a slider pull tab and a lock releasably engageable therewith, aid slider pull tab

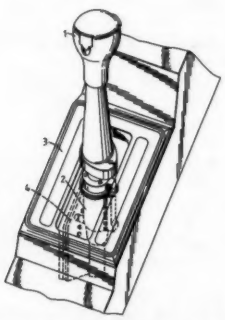
having at one end an engaging pin and an elongate aperture defined by said engaging pin, and said lock including a casing, a base plate underlying aid casing, an extension extending from said base plate and exposed out of said casing toward said pull tab, said lock having a locking lug provided on said extension and dimensioned to receive said aperture, a latch positioned adjacent to and operative with said locking lug for locking said engaging pin, a spring member normally biasing said latch toward said locking lug in overlying relation to said engaging pin, a lock tumbler rotatable to releasably lock said latch with said engaging pin, and a lock release means adapted to unlock said latch from said engaging pin.

5,081,856

LOCK INCORPORATING GEAR SHIFT LEVER

Yun-Tung Hsu, No. 9, Floor 2, Alley 2, Lane 437, Nei-Hu Rd., Sec. 1, Nei-Hu Dist., Taipei, Taiwan

Filed Jul. 19, 1990, Ser. No. 555,230
Int. Cl.[5] E05B *65/12*
U.S. Cl. 70—247 **13 Claims**



1. A lock incorporating gear shift lever, comprising:

a rotatable key operable plug having an axial first keyway;

a lever member having an axial hollow space to receive said rotatable plug and a transverse first through bore formed below said axial hollow space;

a locking plate disposed adjacent to said lever member and having a first receiving hole aligned with said transverse first through bore;

a locking post received inside said transverse first through bore and having one end biased to engage said locking plate at said first receiving hole, said locking post being actuated by said plug to disengage from said locking plate when said plug is rotated;

a longitudinal handle section rotatably and detachably mounted on a top end of said lever member and having a key extending substantially downwardly into said axial first keyway, said handle section being rotated about the axis of said lever member so as to rotate said key plug and cause movement of said locking post towards or away from said locking plate; and

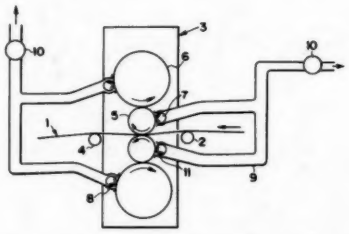
means for releasably locking said handle section against said lever member when said handle section is attached to said lever member.

5,081,857

COLD ROLLING METHOD USING CLEANING BRUSHES FOR AT LEAST THE BACK UP ROLLS

Naoki Matsui; Shuichi Iwato; Shuji Kaneto; Takami Kubo; Masayuki Yamazaki, and Shigeru Moriyama, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Mar. 5, 1990, Ser. No. 488,329
Claims priority, application Japan, Apr. 28, 1989, 1-107347; Apr. 28, 1989, 1-107348; Apr. 28, 1989, 1-107349
Int. Cl.[5] B21B *28/04, 37/00*
U.S. Cl. 72—6 **9 Claims**



1. A method for cold rolling a strip in a rolling apparatus comprising at least a pair of work rolls and a pair of back up rolls, each of said back-up rolls being positioned to be in contact with a respective roll of said pair of work rolls and wherein suction means having at least one suction inlet are provided to remove particles generated by the contact between said rolls, comprising the steps of:

providing at least one rotatable brushing roll for at least one of said back up rolls which is positioned to contact and brush said at least one back up roll;

positioning said at least one suction inlet adjacent said at least one brushing roll;

providing suction control means adjacent said at least one suction inlet of said suction means, said suction control means being located in the vicinity where said at least one brushing roll and said at least one back up roll contact each other; and

adjusting said suction control means to provide an airflow into said at least one suction inlet of at least five m/sec, said adjusting step including adjusting a size of an opening of said suction inlet.

5,081,858

METHOD FOR FORMING A LUBRICANT COAT ON THE SURFACE OF A MATERIAL TO BE FORGED AND A FORGING DEVICE PROVIDED WITH A LUBRICANT COAT FORMING MEMBER

Yukio Ito, Yokkaichi; Tadashi Akazawa, Shijonawate, and Takao Noguchi, Osaka, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha and Daido Machinery Ltd., Japan

Filed Jun. 18, 1991, Ser. No. 717,028
Claims priority, application Japan, Jun. 26, 1990, 2-167497
Int. Cl.[5] B21B *45/02*
U.S. Cl. 72—43 **11 Claims**

1. A forging apparatus having means for forming a substantial uniform lubricant coat on a surface of an electrically conductive slug to be forged and means for forging the lubricant coated slug into a desired shape wherein the means for forming a lubricant coat comprises:

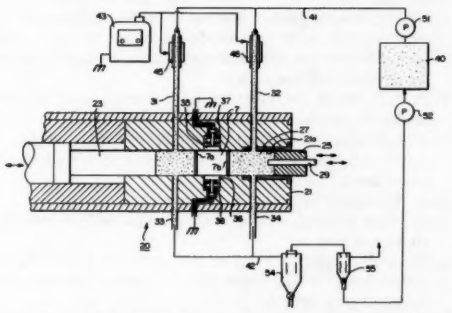
means for electrostatically charging a particulate lubricant;

a lubricant applicator comprising an electrically insulated closable space adapted to receive the slug therein with at least the surface to be coated exposed within the space;

means for electrically grounding the slug when so disposed in the space;

an inlet facilitating introduction of charged lubricant parti-

cles into the space with the surface to be coated exposed thereto;



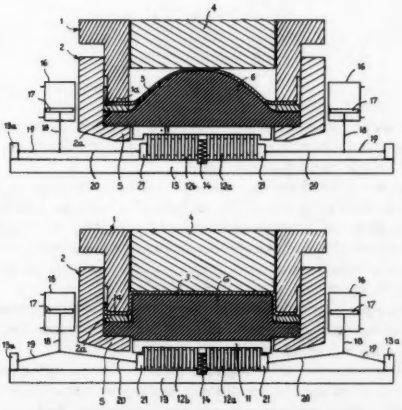
the charged lubricant particles being attracted to the electrically grounded slug thereby to form said uniform coat of said lubricant on said surface.

5,081,859

DEVICE FOR PRESSING SHEET MATERIAL ON AN ELASTIC FORMING DIE

Gabriel De Smet, Nogent sur Oise, France, assignor to Isoform, Puteaux, France

Filed Dec. 27, 1989, Ser. No. 457,517
Claims priority, application France, Dec. 30, 1988, 88 17526
Int. Cl.[5] B21D *22/10, 26/00*
U.S. Cl. 72—57 **18 Claims**



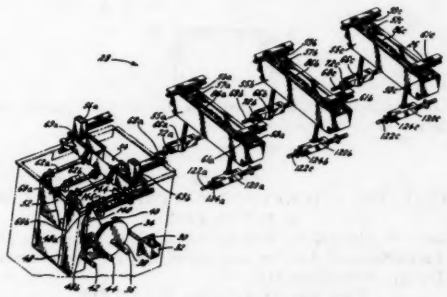
1. A device for pressing a blank of sheet material, comprising a cushion comprising an elastic material, a retaining box surrounding the cushion, said retaining box including a rigid bottom wall for supporting the cushion, means for preforming a sheet blank comprising a central slide, a punch cooperative with the central slide, means for absorbing an excess volume of the elastic cushion relative to the volume determined by the surface area of the finished part to be obtained, wherein said means for absorbing the excess volume of the elastic cushion comprise means adjacent to and movable relative to the elastic cushion for acting on the elastic cushion, and control means cooperative with said means for acting on the elastic cushion for controlling the displacement of said means for acting on the elastic cushion and wherein said means for acting on the elastic cushion comprises said rigid bottom wall of the retaining box, and said control means are cooperative with said rigid bottom wall for controlling the displacement of said rigid bottom wall.

5,081,860

BACKLASH REDUCTION SYSTEM FOR TRANSFER FEED PRESS RAIL STANDS

Anthony Rante, Westmont, Ill., assignor to Connell Limited Partnership, Boston, Mass.

Filed Oct. 22, 1990, Ser. No. 602,118
Int. Cl.[5] B21D *43/05*
U.S. Cl. 72—405 **12 Claims**



1. In a transfer feed press for performing a series of press operations on a workpiece at a series of work stations, a transfer feed system for moving a workpiece through successive work stations comprising the combination of:

a first and a second transfer feed rail extending longitudinally along opposite sides of a series of work stations,

means for independently controlling movement of the first rail and the second rail along a longitudinal axis defining the direction of workpiece movement through the successive work stations of the press, along a transverse axis defining the direction of movement of the rails in and out of engagement with the workpieces at the various work stations, and a vertical axis defining the direction of movement raising and lowering the workpieces, said means for independently controlling movement of the rails including at least one rotatable gear having a driving shaft rotating in a direction for moving at least one of said rails along its respective axis,

tensioning means in nondriving relationship with and separate from said movement controlling means including

rotatable driving means,

coupling means connecting said rotatable driving means to the gear driving shaft, and

tension maintaining means associated with the coupling means such that the tensioning means biases the gear driving shaft in a direction opposite to the rotatable direction of the gear driving shaft, whereby the gear is rotated in a smooth motion and the resulting movement of the rails is substantially smooth and controlled.

5,081,861

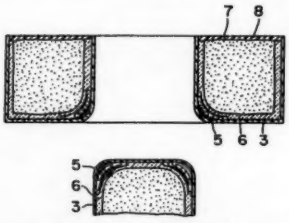
RESIN DIE FOR SHEET METAL PRESSING AND METHOD FOR PRODUCING SAME

Hiroshi Miura, 8-17-208, Hanamigawa, Chiba-Shi, Chiba-Ken 281, Japan

PCT No. PCT/JP87/01029, § 371 Date Apr. 16, 1990, § 102(e) Date Apr. 16, 1990, PCT Pub. No. WO89/03731, PCT Pub. Date May 5, 1989
PCT Filed Dec. 25, 1987, Ser. No. 474,097
Claims priority, application Japan, Oct. 23, 1987, 62-266535
Int. Cl.[5] B21D *37/01*
U.S. Cl. 72—462 **18 Claims**

1. A resin die for sheet metal pressing wherein a reinforcing

member constituted by a thermosetting resin-impregnated cured product of a deformed wound multi-layer body formed



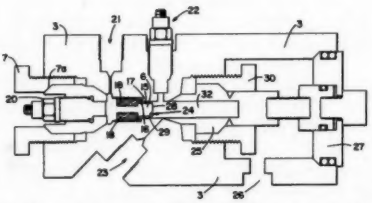
of reinforcing fibers is formed at a die shoulder portion on which is exerted a local load.

5,081,862

APPARATUS AND METHOD FOR PRESSURE TESTING CLOSURE DISKS

Charles W. Merten, Jr., West Carrollton, Ohio, assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Mar. 12, 1990, Ser. No. 491,810
Int. Cl.[5] G01N *19/00*
U.S. Cl. 73—37 **11 Claims**



1. A device for testing closure disks at high rates of change of pressure, said device comprising a body defining a conduit, a means for holding a closure disk to be tested within said conduit, means for providing high pressure in said conduit on each side of said closure disk, at least one pressure transducer mounted to said body for measuring pressure on a downstream side of said closure disk, and a means to rapidly vent high pressure from said downstream side of the closure disk to provide a rate of change of pressure sufficient to rupture the disk.

5,081,863

APPARATUS FOR MEASURING TRANSMISSION OF VOLATILE SUBSTANCES THROUGH FILMS

Philip L. Reid, Duncan, S.C., assignor to Modern Controls, Inc., Minneapolis, Minn.

Continuation of Ser. No. 383,226, Jul. 19, 1989, abandoned, which is a continuation of Ser. No. 5,224, Mar. 2, 1987, abandoned, which is a continuation of Ser. No. 740,187, May 31, 1985, Pat. No. 4,660,441. This application Feb. 4, 1991, Ser. No. 649,191
The portion of the term of this patent subsequent to Aug. 14, 2001, has been disclaimed.
Int. Cl.[5] G01N *15/08*
U.S. Cl. 73—38 **1 Claim**

1. An apparatus for measuring gas transmission through membrane samples located at sample sites comprising:

a lower staging section,

said lower staging section defining a plurality of sample sites;

each sample site having perimeter defining means for hermetically sealing said sample within said sample site;

said perimeter defining means together with one surface of a sample defining a first gas containment volume;

said lower staging section defining conduit means in communication with each said first gas containment volume for providing a flow of gas into and out of said first gas containment volume;

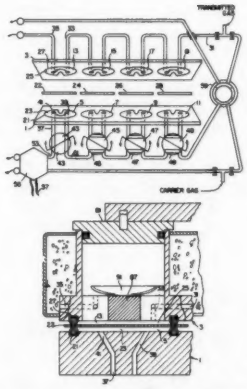
means communicating with said conduit means for interrupting said flow of gas into and out of each said first containment volume so as to provide stagnation of gas within each said first gas containment volume when said means for interrupting is actuated;

each said means for interrupting communicating with a source of gas for introduction into each of said first gas containment volume and having an exit port which receives gas from said gas containment volume when not interrupted;

detection means in communication with said exit port;

said lower staging section defining upwardly projecting alignment pins;

a removable upper staging section defining a plurality of sample sites for alignment with the sample sites of said lower staging section;



said upper staging section having a plurality of perimeter defining means at each sample site for hermetically sealing a sample at said sample site;

said perimeter defining means of said upper staging section together with the other surface of a sample defining a second gas containment volume whereby a sample is contained at each sample site between the perimeter defining means of said lower staging section and the perimeter defining means of said upper staging section;

said upper staging section defining conduit means communicating with said second gas containment volume for providing a flow of gas therethrough;

said upper removable staging section defining alignment pin receipt means for positioning said upper removable staging section upon said lower staging section; and,

a removable lid section for each said sample site of said upper staging section for placement of a volatile solid or liquid substance within said sample site.

5,081,864

LEAK PROTECTED VESSEL

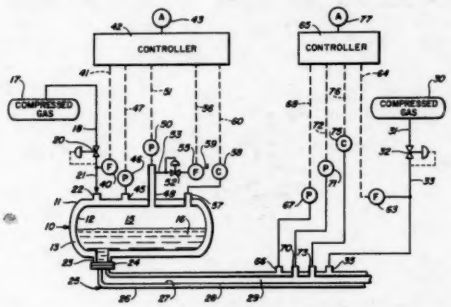
Adil Z. Zaim, San Francisco, Calif., assignor to Omega Environmental, Inc., Bothel, Wash.

Filed Aug. 11, 1989, Ser. No. 392,777
Int. Cl.[5] G01M *3/32*
U.S. Cl. 073—049.2 **6 Claims**

1. The method to detect leakage and prevent escape of fluid from the inner vessel of a double wall container having an annular space between the inner wall and the outer wall, said annular space being hermetically sealed from the interior of a vessel defined by said inner wall, said double wall vessel hav-

ing means to provide compressed gas to said annular space, means to detect loss of compressed gas from said annular space and means to detect the presence of said compressed gas in said vessel, comprising:

providing a compressed gas to said annular space at a controlled pressure higher than the highest pressure in said



vessel and in sufficient volume to prevent leakage of said fluid through a leak site in said inner wall;

detecting the escape of said compressed gas from said annular space; and

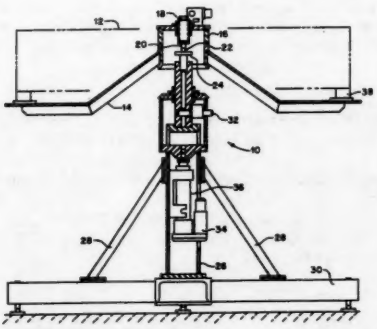
detecting the presence of said compressed gas in said vessel, whereby leakage through the inner wall is established.

5,081,865

CENTER OF GRAVITY LOCATING METHOD

Stuart E. Schechter, Waltham, and Antonio R. Leyenaar, Lexington, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 29, 1990, Ser. No. 546,324
Int. Cl.[5] G01M *1/12*
U.S. Cl. 73—65 **2 Claims**



1. A method for determining the center of gravity of an irregular body having a known weight comprising the steps of:

providing a support balanced in an initial position on a single point;

mounting said body on said support whereby said support will rotate to a second position, the center of gravity of said body being located along a vertical line extended from said point;

measuring the angular rotation of said support from said initial position to said second position;

placing a disturbance mass having a known weight and location on said support to rotate said support to a third position;

measuring the angular rotation from said second position to said third position; and

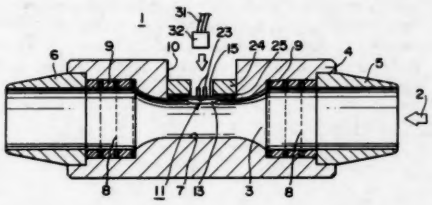
using the known weights of said body and said disturbance mass and the measured angles of rotation, calculating the location of said center of gravity.

5,081,866

RESPIRATORY AIR FLOWMETER

Koichi Ochiai; Shigeru Aoshima, and Shoji Kamiunten, all of Kanagawa, Japan, assignors to Yamatake-Honeywell Co., Ltd., Tokyo, Japan

Filed May 30, 1990, Ser. No. 530,237
Int. Cl.[5] G01F *1/68*
U.S. Cl. 73—204.21 **9 Claims**



1. A respiratory air flowmeter comprising: a flow path forming member for forming a flow path in which respiratory air flows, said member having a restricting segment interposed between a first segment and a second segment, each having an inner diameter larger than said restricting segment, said restricting segment including a third segment interposed between a contracting segment coupled to said first segment and the third segment, and an expanding segment coupled to said third segment and said second segment, wherein said restricting segment of said flow path forming member stabilizes the respiratory air flow;

a rectifying means within said first and second segments of the flow path, arranged with spacing between said means, and disposed symmetrically to the center of the flow path, for stabilizing a respiratory air flow; and

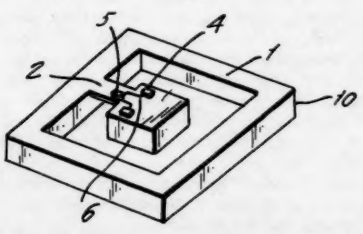
a microsensor having a silicon body and a flow detecting means, said flow detecting means being thermally insulated from the microsensor by an etched pit beneath said flow detecting means, disposed in said restricting segment of said flow path, said microsensor mounted on an inner wall of said flow path forming member, for detecting a flow rate of respiratory air flowing in the flow path.

5,081,867

SEMICONDUCTOR SENSOR

Keizo Yamada, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Oct. 2, 1989, Ser. No. 415,712
Claims priority, application Japan, Sep. 30, 1988, 63-248058; Sep. 30, 1988, 63-248066; Sep. 30, 1988, 63-248067
Int. Cl.[5] G01P *15/08*
U.S. Cl. 73—517 R **7 Claims**



1. A semiconductor sensor device for measuring a physical effect, comprising:

a support member, and a sensor member provided on said support member,

said sensor member being made of monolithic semiconductor material and having a base portion and a rim portion connected to each other by a thin beam portion,

said base portion being fixed to said support member and thereby serving as a reference point for measuring said physical effect,

said rim portion being held by said beam portion such that said rim portion is spaced apart from said base portion and said support member so as to serve as a weight suspended from said base portion by said beam portion,

said beam portion being provided with a resistor, and said base portion being provided with a pair of electrode terminals electrically connected to said resistor, to detect changes of resistance values of said resistor due to mechanical stress caused at said beam portion by said physical effect to be measured.

5,081,868

SPEEDOMETER CONVERSION

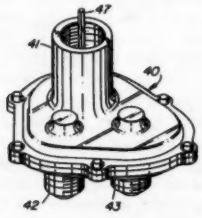
Jean-Paul Samson, Valcourt, Canada, assignor to Bombardier, Inc., Canada

Filed Jul. 11, 1990, Ser. No. 550,995

Claims priority, application Canada, Sep. 27, 1989, 613795

Int. Cl.[5] G01P *3/18, 5/00*

U.S. Cl. 73—532 **3 Claims**



1. A speedometer readout instrument for connection to a flexible speedometer cable in a vehicle, said cable comprising an elongate flexible drive element that is rotatable within a hollow sheath, said instrument comprising:

a casing having a display window;

a geared unit attached to said casing to couple an input element in said instrument with an output element of said geared unit;

first and second spigot means on said geared unit adapted selectively to form an attachment to one end of the hollow sheath of the speedometer cable, first and second input shafts in said geared unit associated with said first and second spigots respectively and each connected to said output element through a respective first or second transmission ratio; said first and second input shafts being selectively coupled to the speedometer drive element by attachment of the cable sheath to the associated spigot;

said instrument being calibrated to provide a readout of the speed of the vehicle in a given first scale of units when the first input shaft is coupled to the drive element of the cable, and in a second scale of units when the second input shaft is coupled to the drive element of the cable, such that the scale of units of the readout can be changed selectively by simply disconnecting the cable sheath from one said spigot and attaching it to the other; and

means for selectively indicating in said display window the scale of units of the displayed speed.

5,081,869

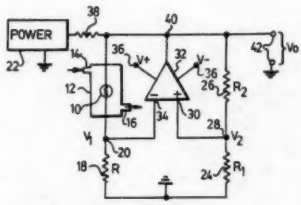
METHOD AND APPARATUS FOR THE MEASUREMENT OF THE THERMAL CONDUCTIVITY OF GASES

Raynald Hachey, Shipshaw; Daniel Lamarre, Duberger, and Jacques Marcotte, Jonquiere, all of Canada, assignors to Alcan International Limited, Montreal, Canada

Continuation-in-part of Ser. No. 307,318, Feb. 6, 1989, Pat. No. 4,918,974. This application Dec. 11, 1989, Ser. No. 448,548

Int. Cl.[5] G01N *25/18*

U.S. Cl. 73—25.03 **34 Claims**



1. A method for the measurement of gas thermal conductivity employing a katharometer comprising a katharometer enclosure enclosing a katharometer element having a temperature resistance characteristic, the method including:

passing a test gas whose thermal conductivity is to be measured into the katharometer enclosure over a thermistor element to thereby change its temperature from a predetermined value and thereby change its resistance from a corresponding value;

wherein the thermistor is connected in series with a resistor to provide a first potential divider having a respective first junction;

comparing the potential at the first junction with that at the junction of a second potential divider;

employing the result of the comparison corresponding to the change of resistance of the thermistor to change the supply of electrical power to the thermistor to restore its temperature to the predetermined value and its resistance to the corresponding value; and

measuring the amount of power supplied to the thermistor with its temperature restored to the predetermined value to determine the test gas thermal conductivity.

5,081,870

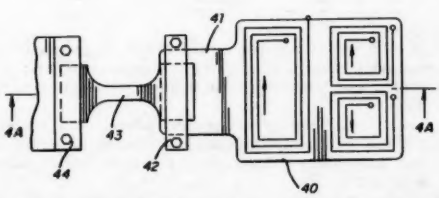
METHOD AND APPARATUS FOR DETERMINING DYNAMIC MECHANICAL PROPERTIES OF MATERIALS

Fitzgerald, Edwin R., 2445 Tracey's Store Rd., Parkton, Md. 21120

Filed Apr. 12, 1990, Ser. No. 507,793

Int. Cl.[5] G01H *1/00;* G01M *7/00;* G01N *29/00*

U.S. Cl. 73—575 **20 Claims**



1. An apparatus for determining the dynamic mechanical properties of materials comprising, in combination, means for creating a unidirectional magnetic flux field, means disposed within the flux field and movable in a plane transverse to the flux field, said last named means including at least a first coil disposed coplanar with the plane transverse to the flux field, a second coil rigidly coupled mechanically to the first coil and

disposed coplanar with the plane transverse to the flux field, means for passing current through the first coil to move the first and second coils in a plane transverse to the electrical field and means connected to the second coil for measuring the electrical voltage generated in the second coil when the coils are vibrated within the magnetic flux field.

5,081,871

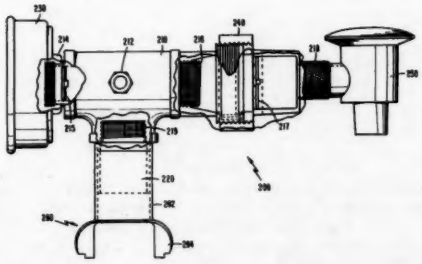
BREATH SAMPLER

Robert A. Glaser, Cincinnati, Ohio, assignor to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 463,574, Jan. 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 305,286, Feb. 2, 1989, abandoned. This application Feb. 25, 1991, Ser. No. 659,490

Int. Cl.[5] A61B *5/00*

U.S. Cl. 73—863.23 **21 Claims**



1. A portable, through-flow breathing system for collecting breath samples from a human subject for subsequent determination of selected analyte content thereof, comprising:

a tubular body having a minimal volume compatible with having engageable first and second ends;

first conduit means for conveying through the tubular body the subject's essentially once-exhaled breath, said first conduit means fluidly communicating with said tubular body at a location intermediate said first and second ends;

second conduit means fluidly communicating with said first end of said tubular body, said second conduit means including air filtering means and selectively operable first valve means for admitting ambient air through said filtering means and into said tubular body when a subject inhales through said second conduit means; and

third conduit means fluidly communicating with said second end of said tubular body, said third conduit means including low impedance, compact analyte collection means for concentrating a collected analyte for prolonged storage pending analysis thereof located therein and selectively operable second valve means for admitting the essentially once-exhaled breath from said tubular body into said sample collection means when the subject exhales through said first conduit means,

said tubular body and said first, second and third conduit means being formed to be compact and lightweight in combination to facilitate convenient holding thereof by the human subject during use, and

said first valve means being closed when said second valve means is open, and said second valve means being closed when said first valve means is open thereby ensuring sampling of only a through-flow of the subject's essentially once-exhaled breath.

5,081,872

PIPETTING INSERT

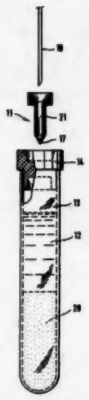
Andreas Greter, Steinhausen, Switzerland, assignor to Hoffman-La Roche Inc., Nutley, N.J.

Filed May 21, 1990, Ser. No. 526,347

Claims priority, application Switzerland, Jun. 1, 1989, 2052/89

Int. Cl.[5] G01N *1/10*; B01L *3/02*

U.S. Cl. 73—864.74 **14 Claims**



1. A pipetting insert for a pipetting device for taking a sample from a vacuum tube closed in an airtight manner by a stopper comprising:

a housing having an outer wall and an inner wall of substantially the same length forming a central tubular part connected to a conical part and to tip means, the housing having an open end and a closed end,

the inner wall defining a bore extending from the open end of the housing to the closed end of the housing and the bore having a diameter substantially perpendicular to a longitudinal axis of the housing,

the central tubular part having a first end connected to the conical part, which is open on both of its ends, and the central tubular part having a second end connected to the tip means,

said tip means being formed by the inner and the outer walls at the closed end of the housing, and used for piercing the stopper of the vacuum tube and for being pierced by the pipetting device,

and the outer wall defining at least one connecting duct means being open on both ends and having a diameter substantially smaller than the diameter of the bore, said connecting duct means extending from the tip means in a direction toward the conical part and used for equalizing pressure in the vacuum tube with atmospheric pressure surrounding the tube while at the same time preventing loss of the sample from the vacuum tube.

5,081,873

METHOD OF INSPECTING CONSTANT-VELOCITY JOINT

Tokio Kikuchi; Hiroshi Shiina; Keiji Takakura, and Satoru Ichihashi, all of Saiyama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1990, Ser. No. 543,588

Claims priority, application Japan, Jun. 26, 1989, 1-160904

Int. Cl.[5] G01M *13/02*

U.S. Cl. 73—865.9 **10 Claims**

1. A method of inspecting a constant-velocity joint having inner and outer members which are rotatably held concentrically with each other, comprising the steps of:

continuously tilting the inner member with respect to the

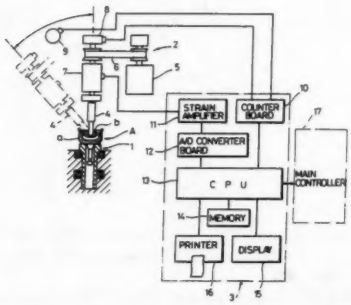
outer member up to a maximum tilt angle while rotating the inner member about its own axis:

measuring and recording data including tilt angles and torque values of the inner member at predetermined rotational angles thereof while the inner member is being tilted;

detecting a maximum torque value of the inner member at said maximum tilt angle and a first angular position of the inner member at said maximum torque value, from said recorded data;

detecting a minimum torque value of the inner member at said maximum tilt angle and a second angular position of the inner member at said minimum torque value, from said recorded data;

successively detecting tilt angles and torque values of the inner member at respective angular positions which are successive revolutions prior to said first angular position at said maximum torque value, from said recorded data,



and setting said torque values as maximum torque values at the corresponding tilt angles;

successively detecting tilt angles and torque values of the inner member at respective angular positions which are successive revolutions prior to said second angular position at said minimum torque value, from said recorded data, and setting said torque values as minimum torque values at the corresponding tilt angles;

calculating a pair of curves representing the maximum and minimum torque values, respectively, at the respective tilt angles of the inner member, from the set maximum and minimum torque values; and

thereafter, calculating a maximum torque value and a minimum torque value at a given tilt angle of the inner member, from said curves, and comparing said calculated maximum and minimum torque values with predetermined reference values, thereby determining whether the constant-velocity joint is good or not.

5,081,874

ENGINE STARTER

Shuzoo Isozumi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaishi, Japan

PCT No. PCT/JP87/00729, § 371 Date Aug. 9, 1988, § 102(e) Date Aug. 9, 1988, PCT Pub. No. WO88/02567, PCT Pub. Date Apr. 7, 1988

PCT Filed Oct. 1, 1987, Ser. No. 221,245

Claims priority, application Japan, Oct. 2, 1986, 61-236435

Int. Cl.[5] F02N *11/00*

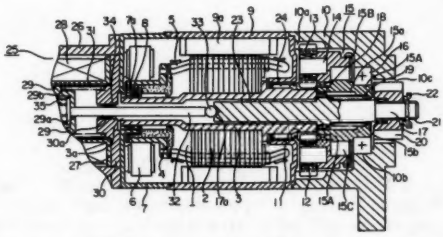
U.S. Cl. 74—7 A **2 Claims**

1. An engine starter comprising:

an electric motor having a cylindrical armature rotating shaft, an output rotating shaft, the armature shaft having a cylindrical bore concentric with the axis of the armature shaft, said output rotating shaft being armature shaft, an output slidably received in the bore and extending into the bore at one axial end of said motor,

a one-way clutch mechanism transmitting rotational force of said armature rotating shaft to said output rotating shaft when said motor is operated, and

a solenoid switch which has a moving member extending into the bore at the other axial end of said motor which pushes and slides said output rotating shaft by electromag-



netic force, said solenoid switch also having a movable contact and a fixed contact for supplying current to said motor by forcing the movable contact into contact with the stationary contact by said electromagnetic force, and said output rotating shaft being journalled in the cylindrical bore of said armature rotation shaft.

5,081,875

STARTER MOTOR

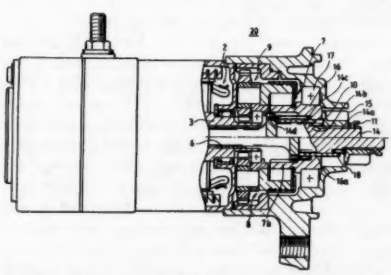
Shuzou Isozumi, and Keiichi Konishi, both of Hyogo, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Sep. 18, 1990, Ser. No. 584,016

Claims priority, application Japan, Sep. 29, 1989, 1-252082; Nov. 1, 1989, 1-286195

Int. Cl.[5] F02N *11/00*

U.S. Cl. 74—7 R **7 Claims**



1. An engine starter comprising:

a DC motor having a hollow armature rotation shaft;

drive force transmitting means for transmitting a drive force generated by said DC motor, said drive force transmitting means including a planetary gear speed reducer connected to said armature rotation shaft and an overrunning clutch device;

an output rotation shaft axially slidably received in a hollow portion of said armature rotation shaft, said output rotation shaft having a helical spline portion engaged with a helical spline portion of said overrunning clutch device;

a pinion, adapted to be engaged with a ring gear of an engine, mounted on a front end of said output rotation shaft; and

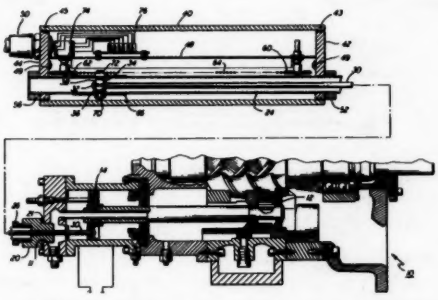
spring means, provided rearwardly of a rear face of said pinion, for urging said pinion forwardly.

5,081,876

SLIDE VALVE POSITION INDICATOR AND MAGNETIC COUPLER

Arthur J. Marshall, Etters, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 92,827, Sep. 3, 1987, Pat. No. 4,743,170.
This application Feb. 29, 1988, Ser. No. 161,552
Int. Cl.[5] F16H *27/02*
U.S. Cl. 74—89.21 3 Claims



1. A linear-to-rotary motion converting means for converting linear motion of a first member in a pressurized environment to rotary motion of a second member in a non-pressurized environment comprising:

a nonmagnetic, closed tube adapted to be in fluid communication with the pressurized environment:

rod means having a first end adapted to be secured to said first member and a second end within said tube so that said rod means moves in said tube responsive to linear movement of said first member;

first magnetic means secured to said second end of said rod means so as to be movable with said rod means in said tube;

second magnetic means surrounding said tube and magnetically coupled to said first magnetic means so as to be movable therewith: and

a linear-to-rotary motion converter coupled to said second magnetic means whereby linear movement of said second magnetic means produces a rotary output from said linear to rotary motion converter.

5,081,877

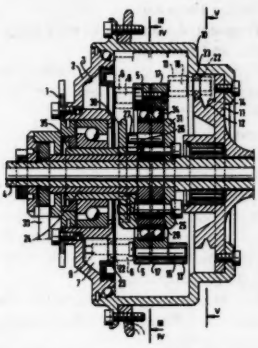
STEPLESSLY VARIABLE TRANSMISSION

Jean-Pierre Mercat, Chateau Renault, France, assignor to Look, S.A., Nevers Cedex, France

Filed Aug. 1, 1990, Ser. No. 561,527
Claims priority, application European Pat. Off., Aug. 3, 1989, 89114383.6
Int. Cl.[5] F16H *29/04;* B62M *1/02*
U.S. Cl. 74—116 12 Claims

1. Steplessly variable transmission comprising a drivable element and a driving element which are rotatably and coaxially journalled and are connected together via at least two change speed units arranged sequentially, the change speed units having input and output members, the driving element being connected with the input member of the first sequentially arranged change speed unit and the drivable element being connected with the output member of the last sequentially arranged change speed unit, the change speed unit having the output member journalled axially parallel to the respective input member and being displaceable relative thereto, the input and output members of the change speed unit being coupled together by a plurality of pivotal levers having first and second ends, the first end pivotally journalled, and the second end having a coupling element which enters into force transmitting clamping engagement during operation with regions of a ring track, wherein the improvement comprises

the change speed units combined pairwise inversely forming unit pairs having a first and second change speed unit



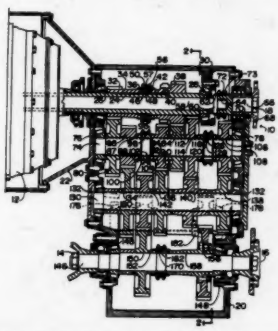
having first and second eccentricities respectively, each unit pair having an eccentric positioning device which jointly actuates one of the members with the ring tracks and the members with the coupling elements.

5,081,878

TRACTOR TRANSMISSION

Michael Stasiuk, 5535 Columbia Street, Vancouver, British Columbia, Canada V5Y 3H5

Filed Mar. 12, 1990, Ser. No. 491,960
Int. Cl.[5] F16H *03/08*
U.S. Cl. 74—360 14 Claims



1. A drop box transmission for a vehicle comprising:

a casing;

a first, input shaft rotatable in the casing;

a plurality of input shaft drive gears mounted rotatably on the input shaft;

range selector shift means for selectively and alternatively connecting the input shaft drive gears to the input shaft to be driven thereby;

a second shaft rotatable in the casing, parallel to the input shaft;

a plurality of second shaft driven gears mounted on the second shaft for rotation therewith and in constant mesh with respective ones of the input shaft drive gears;

a plurality of second shaft drive gears mounted rotatably on the second shaft;

ratio selector means for selectively and alternatively connecting the second shaft drive gears to the second shaft to be driven thereby;

a third shaft rotatably mounted in the casing parallel to the first and second shafts;

a plurality of third shaft driven gears mounted on the third shaft for rotation therewith and in constant mesh with respective ones of the second shaft drive gears;

a third shaft drive gear mounted on the third shaft for continuous rotation therewith;

a fourth shaft mounted rotatably in the casing parallel to the first, second, and third shafts;

forward and reverse driven gears rotatably mounted on the fourth shaft, the forward driven gear being in constant mesh with the third shaft drive gear;

a forward and reverse selector means for selectively and alternatively connecting the forward and reverse driven gears to the fourth shaft;

a reverse idler shaft rotatably mounted in the casing parallel to the first, second, third and fourth shafts;

a reverse idler shaft driven gear mounted on the reverse idler shaft for rotation therewith and in constant mesh with the third shaft drive gear;

a reverse idler shaft drive gear mounted on the reverse idler shaft for rotation therewith and in constant mesh with the reverse driven gear.

5,081,879

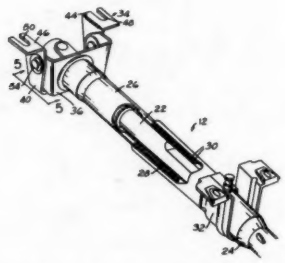
STEERING COLUMN ASSEMBLY MOUNTING BRACKET

Peter N. Pidgeon, Belmont, Australia, assignor to Ford Motor Company, Dearborn, Mich.

Filed May 24, 1990, Ser. No. 528,649

Int. Cl.[5] B62D *1/16, 1/19*

U.S. Cl. 74—492 **20 Claims**



1. A mounting mechanism for mounting a steering column in a vehicle, said steering column including a steering shaft assembly having an upper end connected to a steering wheel and a lower end connected to a steering linkage, an upper jacket surrounding and rotatably supporting the upper end of said steering shaft assembly and a lower jacket surrounding and rotatably supporting said lower end of said steering shaft assembly, said upper jacket being telescopically collapsible relative to said lower jacket, and energy absorbing means interposed between said upper and lower jackets, said mounting mechanism comprising:

means for rotatably mounting said lower jacket to said mounting mechanism and for permitting said lower jacket to rotate relative to mounting mechanism upon imposition of a predetermined axial load upon said steering column; and

means for securing said mounting mechanism to said vehicle.

5,081,880

DRIVESHAFT WITH DRIVING ELEMENTS ATTACHED TO IT IN GROUPS

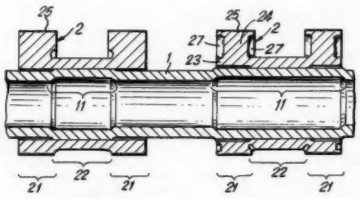
Helmut Swars, Bergisch, Fed. Rep. of Germany, assignor to Emitec Gesellschaft für Emissionstechnologie mgH, Lohmar, Fed. Rep. of Germany

Continuation of Ser. No. 252,731, Oct. 3, 1988, abandoned. This application Mar. 1, 1991, Ser. No. 664,467

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1987, 8713285

Int. Cl.[5] F16D *1/06;* **F16H** *53/02*

U.S. Cl. 74—567 **6 Claims**



1. A driveshaft, comprising:

a tube (1) having a length equal to that of the driveshaft;

a plurality of driving elements (21) attached to said tube; and

a thin-wall sleeve (22) connecting at least two of the plurality of driving elements (21) to each other, said at least two driving elements (21) being integral with the connecting sleeve (22), a connection between said tube (1) and said driving elements (21) being established by a friction locking connection between said tube (1) and said connecting sleeve (22) only in axial portions of said connecting sleeve (22) between said at least two driving elements (21).

5,081,881

FLUID FILLED ELASTOMERIC DAMPING DEVICE

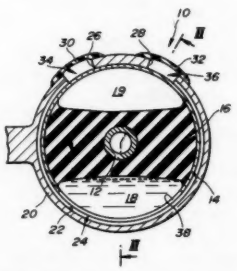
Takanobu Ide, Isehara, Japan, assignor to Nissan Motor Company, Ltd., Japan

Division of Ser. No. 352,382, May 15, 1989, Pat. No. 5,007,304. This application Oct. 22, 1990, Ser. No. 600,883

Claims priority, application Japan, May 18, 1988, 63-65414

Int. Cl.[5] F16F *15/10, 15/22;* **G05G** *1/00*

U.S. Cl. 74—573 F **6 Claims**



1. An elastomeric damping device comprising:

concentric rigid inner and outer sleeves having a space therebetween;

a resilient member within said space connecting said inner and outer sleeves together and thereby subdividing said space into two pockets;

a working chamber in one of said pockets enclosed between said resilient member and said outer sleeve, said working chamber containing a fluid;

a generally tubular bracket fitted on said outer sleeve;

a first flexible wall member outside of said bracket;

a first compensation chamber outside of said outer sleeve, bounded in part by said flexible wall member; and

a first passageway defined between said bracket and said outer sleeve and communicating said working chamber and said first compensation chamber to provide fluid communication therebetween.

5,081,882

DAMPER DEVICE FOR A MOTOR

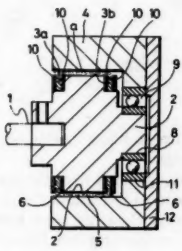
Toshiharu Kogure, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Japan

Continuation of Ser. No. 234,816, Aug. 22, 1988, abandoned. This application Aug. 13, 1990, Ser. No. 569,374

Claims priority, application Japan, Sep. 4, 1987, 62-135671[U]

Int. Cl.[5] F16F *1/10*

U.S. Cl. 74—574 **16 Claims**



1. A damper device for a motor comprising:

a boss section secured to a rotary shaft of the motor;

a mass inertia section rotatably and mechanically supported by said boss section, said mass inertia section having a peripheral portion which is spaced from and at least partly surrounds an outer peripheral portion of said boss section to define an annular gap therebetween;

a magnetic fluid filling up said gap; and

a pair of axially spaced ring-shaped magnets provided on one of said boss section and said mass inertia section for containing said magnetic fluid in said gap, said pair of magnets being spaced apart a substantial distance by said one of said boss section and said mass inertia section which defines a radially offset area between said magnets containing therein the magnetic fluid.

5,081,883

DEVICE FOR ATTACHING A SHOE TO A BICYCLE PEDAL

Antonio Romano, Padova, Italy, assignor to Campagnolo S.r.l., Vincenza, Italy

Filed Apr. 6, 1990, Ser. No. 505,965

Claims priority, application Italy, Apr. 13, 1989, 67273 A/89

Int. Cl.[5] G05G *1/14*

U.S. Cl. 74—594.6 **16 Claims**

1. A device for attaching a shoe to a bicycle pedal, comprising:

a. a pedal body rotatably mountable on a bicycle pedal crank and provided with an upper bearing surface;

b. a counter-member attachable to a sole of the shoe and having a lower bearing surface engageable with the upper bearing surface of the pedal body, and

c. rapid attachment means for establishing firm mutual coupling of the pedal body and the counter-member by engagement of the upper bearing surface of the pedal body and the lower bearing surface of the counter-member, and wherein:

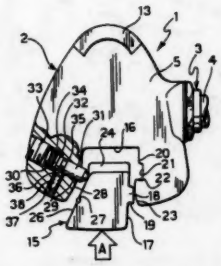
the pedal body includes a toe piece adapted to house and prevent upward disengagement of a front portion of the counter-member from the upper bearing surface of the pedal body when the pedal body and the counter-member are in the mutually coupled position;

the counter-member includes a first step adapted, in a coupled position of the pedal body and the counter-member, for engagement beneath a corresponding second step formed in the pedal body rearwardly of the toe piece and preventing upward disengagement of the counter-member from the pedal body, and

the rapid-attachment means comprising:

mutual coupling surfaces formed, respectively, in the counter-member and in the pedal body and extending substantially in planes perpendicular to the planes of the lower bearing surface of the counter-member and of the upper bearing surface of the pedal body, and comprising a tooth and a recess engageable with each other, in coupled position of the counter-member and the pedal body, by relative movement of the counter-member and the pedal body in a direction transversely of the length thereof;

a cam member formed on the counter-member and having an elongated cam surface lying in a plane perpendicular to the plane of the lower bearing surface of the counter-member and disposed at an angle to the longitudinal centerline of the counter-member, the cam surface being provided with an elongated groove extending substantially between upper and lower edges of the cam surface in a position intermediate forwardly and rearwardly disposed edges of the cam surface;



a retractable and extendable spring-biased thrust member carried by the pedal body and adapted to cooperate with the cam surface on the counter-member by:

first, a cam surface-induced retraction of the thrust member against the biasing spring upon engagement of the lower bearing surface of the counter-member with the upper bearing surface of the pedal body and under the action of downward and longitudinally forwardly directed movements of the counter-member relative tot he pedal body;

second, when the forward movement of the counter-member relative to the pedal body brings into registration respectively (1) the front portion of the counter-member and the toe piece on the pedal body, (2) the first and second steps, and (3) the tooth and recess, an extension of the thrust member into the elongated groove on the cam surface and simultaneously an exertion by the thrust member on the cam member of a spring-induced coupling force having a component of predetermined magnitude in a direction transverse of the length of the counter-member, such force causing snap engagement of the tooth and recess and preventing disengagement of the tooth and recess under an applied force having a component in a direction transverse of the length of the counter-member of magnitude less than the aforesaid predetermined magnitude, and

third, upon application to the counter-member and

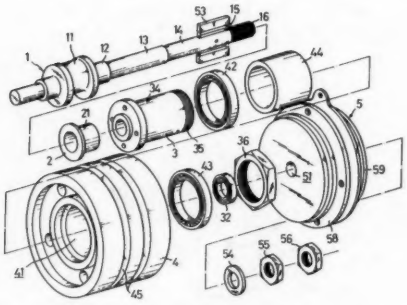
the associated cam member of a force having a component in a direction transverse to the length of the counter-member greater than the aforesaid predetermined magnitude, retraction of the thrust member out of the elongated groove thereby permitting decoupling of the counter-member and the pedal body by (1) transverse disengagement of the tooth and recess and thereafter by (2) longitudinal disengagement of (i) the front portion of the counter-member and the toe piece of the pedal body and (ii) the first and second steps by movement of the counter-member longitudinally rearward relative to the direction of advance of the bicycle.

5,081,884

CRANKSHAFT APPARATUS

Cheng-Ming Cheng, and Chien-Chang Cheng, both of No. 64-2, Mar Yuan Li, Chupei, Hsinchu, Taiwan

Filed Nov. 1, 1990, Ser. No. 608,487
Int. Cl.[5] F16C *3/04*; G05G *1/00*
U.S. Cl. 74—595 **8 Claims**



1. A crankshaft apparatus comprising:

a crankshaft including a crank pin, an inner portion, a middle portion, and an end portion;

a bearing mounted about said inner portion of said crankshaft;

a sleeve mounted about said middle portion of said crankshaft and being adapted to be fixed to a crank machine frame by bolts, said sleeve having an inner hole substantially all of which has an inside diameter slightly larger than an outside diameter of said middle portion of said crankshaft, an end portion of said inner hole of said sleeve having an inside diameter larger than the remainder of said inner hole;

a collar bearing mounted in said end portion of said inner hole of said sleeve;

a flywheel mounted about said sleeve and having a shaft hole;

bearings interposed between said flywheel and said sleeve;

a collar mounted in said shaft hole of said flywheel and about said sleeve;

a clutch mounted about said end portion of said crankshaft and including a driven side and a driving side, said driven side of said clutch being fixed to said flywheel;

key means, operably connected between said end portion of said crankshaft and said driving side of said clutch, for causing engagement between said end portion of said crankshaft and said driving side of said clutch; and

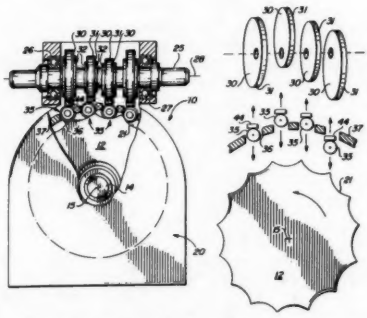
means for preventing said clutch, said flywheel, and said sleeve from falling off of said crankshaft.

5,081,885

DRIVE WITH OSCILLATOR-COUPLED TRANSVERSELY MOVING GEAR ELEMENTS

James E. Shaffer, Maitland, Fla., assignor to Consulier Industries, Inc., Riviera Beach, Fla.

Filed Dec. 28, 1989, Ser. No. 458,149
Int. Cl.[5] F16H *37/16, 55/32, 13/08*
U.S. Cl. 74—640 **20 Claims**



1. Apparatus for transmitting motion between an input and an output, comprising:

a first element having a first periodically undulated surface and being adapted to move in a first direction;

a plurality of second elements, each having a cam surface facing said first surface and each being adapted to move in a second direction tangentially transverse to said first direction;

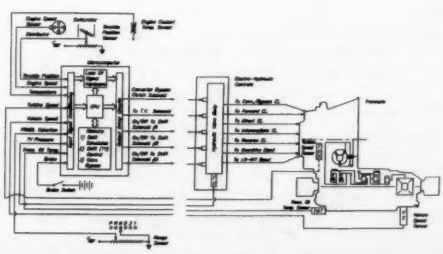
oscillator means mounted to simultaneously traverse said first and second surfaces for mechanically coupling said first and second elements by driving one of said first and second surfaces in response to being driven by the other of said first and second surfaces; said other of said first and second surfaces being shaped to reciprocate said oscillator means between points of maximum and minimum amplitude when moved in its corresponding one of said first and second directions, and said one of said first and second surfaces being shaped to be moved by said oscillator means in its corresponding other of said first and second directions in response to said reciprocation.

5,081,886

AUTOMATIC TRANSAXLE CONTROL SYSTEM FOR AN AUTOMOTIVE VEHICLE

Dennis W. Person; Frank W. Timte; John A. Daubenmier, all of Canton; John I. Zielke, Highland; Rodney B. Smith, South Lyon, and Roy S. Williams, Plymouth, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 14, 1990, Ser. No. 582,470
Int. Cl.[5] B60K *41/06*
U.S. Cl. 74—866 **9 Claims**



1. An automatic transmission control system comprising

multiple ratio planetary gearing, fluid pressure operated clutch and brake means for establishing multiple speed ratio changes in said gearing, a pressure source;

control valve circuitry connecting said pressure source with said clutch and brake means including multiple shift controlling valve means, multiple solenoid valve means forming a part of said circuitry, each multiple solenoid valve means including a valve element connecting a high pressure portion of said circuitry to a first of said multiple shift controlling valve means in said circuitry and adapted to open and close a fluid pressure connection between said first shift controlling valve means and said high pressure portion as it changes between open and closed operating states;

each shift controlling valve means having multiple shift functions and being adapted to shift in one direction selectively to establish a first set of operating conditions and in the opposite direction to establish a different set of operating conditions;

means for normally holding said shift controlling valve means in one position when its associated solenoid valve means is in a first operating state;

each of said multiple shift controlling valve means establishing and disestablishing fluid pressure delivery paths between it and other shift controlling valve means whereby two solenoid valve means are adapted to trigger a larger number of shift controlling valve means as fluid pressure is transferred from said multiple shift controlling valve means selectively to said fluid pressure operated clutch and brake means.

5,081,887

SYSTEM AND METHOD FOR CONTROLLING VEHICLE SPEED TO PREVENT GEAR SHIFT SHOCK APPLICABLE TO AUTOMATIC TRANSMISSION EQUIPPED VEHICLES

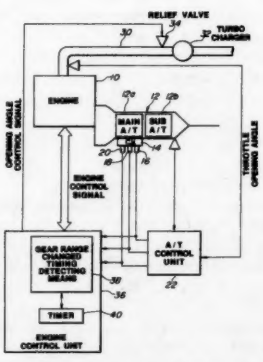
Yuji Kato, Kanagawa, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Jun. 13, 1990, Ser. No. 538,047

Claims priority, application Japan, Jun. 13, 1989, 1-149872

Int. Cl.[5] B60K *41/10*

U.S. Cl. 74—866 **13 Claims**



1. A system for controlling gear shifting characteristics to prevent a gear shift shock in a vehicle equipped with an engine and an engine driven automatic transmission means, comprising:

(a) an automatic transmission means having:

a plurality of frictional elements, combinations of engagements and releases thereof for shifting gears of said automatic transmission;

a plurality of shift valves which respectively engages and releases said frictional elements to cause shifting of the gears;

a plurality of solenoid valves installed individually on the respective shift valves for controlling pressure of the shift valves associated therewith, at least one of the solenoid valves being switched on during the gear shifting transient period in response to a drive signal; and

means for detecting vehicle running conditions and providing said drive signal according to the detected running conditions,

(b) an engine having:

relief means for relieving the intake air pressure supplied to the engine,

(c) a shift control means comprising:

means for detecting a gear shift in said automatic transmission from a low gear to a next higher gear,

means for providing a predetermined time delay upon detection of said gear shift and for producing a delay completion signal upon the lapse of said predetermined delay, and

means for controlling said relief means to vary the intake air pressure supplied to the engine and additionally for lowering the air charging efficiency in response to detection of the gear shift for the duration of the gear shifting transient period and additionally for increasing the air charging efficiency in response to the delay completion signal.

5,081,888

APPARATUS FOR CONNECTING AND DISCONNECTING THREADED MEMBERS

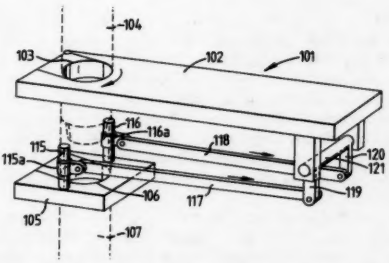
Joerg E. Schulze-Beckinghausen, Garbsen, Fed. Rep. of Germany, assignor to Weatherford, U.S., Inc., Houston, Tex.

Filed Nov. 27, 1989, Ser. No. 441,813

Claims priority, application United Kingdom, Dec. 1, 1988, 8828084

Int. Cl.[5] B25B *13/50*

U.S. Cl. 81—57.16 **22 Claims**



1. An apparatus for connecting and disconnecting threaded members, which apparatus comprises a power tong having a pipe receiving recess and a jaw assembly for gripping and rotating a first pipe, a backup unit having a pipe receiving recess for gripping a second pipe, and means for transmitting reaction forces generated by said power tong to said backup unit, said means for transmitting reaction forces comprising

a first member connected to one of said power tong and said backup unit away from the pipe receiving recess thereof and to the other of said power tong and said backup unit to one side of the pipe receiving recess thereof,

a second member connected to said one of said power tong and said backup unit away from the pipe receiving recess thereof and to said other of said power tong and said backup unit to the other side of the pipe receiving recess thereof,

means for transmitting compressive and tensile forces in one of said first and second members to the other of said first and second members,

said first member and said second member each comprising straps,

said means for transmitting compressive and tensile forces in

one of said fist and second members to the other of said first and second members comprising a third member mounted for pivotal movement on said one of said power tong and said backup unit about an axis extending between said first member and said second member,

said third member having a first tension arm and a second tension arm extending away from said axis, and

said first member being pivotally connected to said first tension arm and said second member being pivotally connected to said second tension arm.

5,081,889

WORKPIECE MACHINING SYSTEM

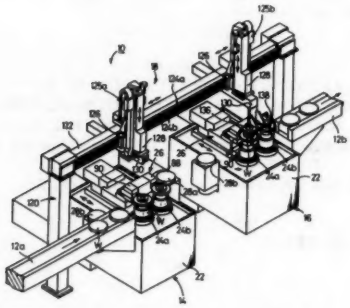
Kohzoh Takano; Yoshinori Oyobiki; Yoshiharu Watabe, and Yasuo Kondo, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 292,542, Dec. 30, 1988, abandoned. This application Jun. 15, 1990, Ser. No. 539,313

Claims priority, application Japan, Feb. 17, 1988, 63-18682

Int. Cl.[5] B23B *5/02, 13/04, 15/00*

U.S. Cl. 82—122 **8 Claims**



1. A workpiece machining system comprising:

a first workpiece inlet conveyor line;

a second workpiece output conveyor line;

at least two machining apparatus disposed on a workpiece transfer path between said first and second conveyor lines, for machining respective workpieces while holding and rotating the workpieces in a same attitude as that in which the workpieces are conveyed along said first and second conveyor lines;

a transfer apparatus for transferring the workpieces from said first conveyor line through said machining apparatus to said second conveyor line while maintaining the workpieces in the same attitude, said transfer apparatus comprising a first transfer mechanism for transferring the workpieces from a pickup point on said first conveyor line to respective machining positions on said at least two machining apparatus, and a second transfer mechanism for transferring the machined workpieces from said machining positions to a delivery point on said second conveyor line, wherein said pickup and delivery points and said respective machining positions are disposed substantially colinearly along said transfer path, each of said first and second transfer mechanisms including holder means for holding the workpieces, wherein each said holder means comprises a pair of holder fingers movable toward and away from each other for supporting one of the workpieces; and

each of said machining apparatus comprising at least one workpiece gripping mechanism for holding and rotating a workpiece in a horizontal attitude, and a cutting mechanism having at least one machining unit for simultaneously machining upper and lower surfaces of the workpiece which is being held and rotated by said workpiece gripping mechanism, said machining unit comprising a pair of cutting tools vertically spaced from each other and movable toward and away from each other, and said workpiece gripping mechanism comprising a vertically extending spindle and a chuck unit disposed upwardly of said spindle for gripping said workpiece.

5,081,890

HORIZONTAL POWER BAND SAW, AND METHOD OF OPERATION

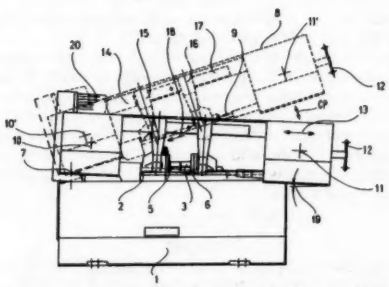
Armin Stolzer, Renchen, Fed. Rep. of Germany, assignor to Keuro Maschinenbau GmbH & Co. KG, Achern Gamshurst, Fed. Rep. of Germany

Filed Jul. 25, 1990, Ser. No. 558,054

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1989, 3927275

Int. Cl.[5] B23D *53/04, 55/08*

U.S. Cl. 83—13 **6 Claims**



1. A method of operating a horizontal power band saw, wherein said power band saw comprises

a saw band (9) driven in a cutting movement direction (18) against and through a workpiece (3), said method comprising

guiding said saw band, when the saw band reaches the region of the workpiece (3) which is adjacent a support surface (2) in a direction which is inclined at an angle (19) of between about 1° to 10° with respect to said support surface, which angle is open in a direction away from said support surface in the cutting movement direction (18) of the saw band ((9) for pulling cutting chips or slivers into the cut being made by the saw band prior to and upon severing the workpiece by the moving saw band.

5,081,891

PUNCH ASSEMBLY

Gary E. Johnson, and John T. Schneider, both of Ramsey, Minn., assignors to Mate Punch & Die Co., Anoka, Minn.

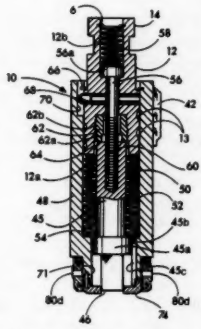
Continuation of Ser. No. 233,735, Aug. 19, 1988, Pat. No. 4,989,484. This application Sep. 17, 1990, Ser. No. 583,963

Int. Cl.[5] B26F *1/14*

U.S. Cl. 83—140 **3 Claims**

1. A punch assembly with provision for self-pumping of cooling air therethrough without the requirement of a source of air under more than normal atmospheric pressure comprising, an external sleeve, said sleeve having a bore therethrough, a punch mounted slidably within the bore, said punch including an enlarged section having a sliding fit within the bore, a reduced diameter section spaced inwardly from the bore in the sleeve to define an air transfer chamber within the bore such that movement of the enlarged section cooperates with the reduced diameter section to pump air as the punch moves and at least one air transfer port in the punch assembly communicating between the air transfer chamber and the atmosphere allowing cooling air from the atmosphere to pass in and out of the chamber as the punch slides within the sleeve and a stripper

plate having an opening corresponding in shape to the shape of the punch and being sized to provide a sliding fit for an operating end of the punch and spring means for yieldably biasing the punch toward retracted position in the sleeve.

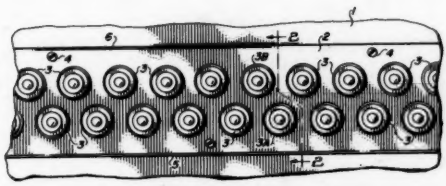


5,081,892

SOLENOID MOUNTING SYSTEMS FOR PLAYER AND REPRODUCING PIANOS

Laurence G. Broadmoore, 908 Glenoaks Blvd., #3, San Fernando, Calif. 91340

Filed Jul. 19, 1990, Ser. No. 554,740
Int. Cl.[5] G10F *1/02*
U.S. Cl. 84—19 **24 Claims**



1. A solenoid stack including a mounting plate structure and a plurality of striker solenoid assemblies, each said solenoid assembly having an outer shell, said mounting plate structure supporting said plurality of striker solenoid assemblies within a keybed such that each given said solenoid assembly is juxtaposed with respect to an individual keytail in order that a thrust member thereof can deliver a key-impelling stroke to the keytail when a coil of said given solenoid assembly is energized; said mounting plate structure having upper and lower faces and an array of apertures extending between said upper and lower faces, each of said apertures being bounded about its complete periphery and positioned to reside beneath an individual keytail when installed in the piano keybed and dimensioned to receive and vertically support a single one of said solenoid assemblies.

5,081,893

STRIKER SOLENOID ASSEMBLY FOR PLAYER AND REPRODUCING PIANOS

Laurence G. Broadmoore, 908 Glenoaks Blvd., #3, San Fernando, Calif. 91341

Filed Jul. 19, 1990, Ser. No. 554,695
Int. Cl.[5] G10F *1/02*
U.S. Cl. 84—19 **20 Claims**

1. A solenoid stack for a piano comprising:

A) an array of striker solenoid assemblies, each of said striker solenoid assemblies including:

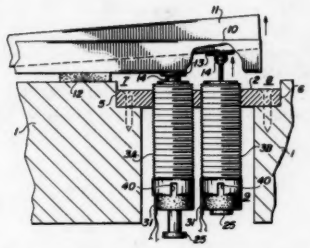
1) a generally cylindrical outer shell;

2) a coil concentrically disposed within said outer shell, said coil having an axial passage extending through its entire length;

3) an inner shell concentrically disposed within said axial passage through said coil;

4) a slug adapted for coaxial translation within said inner shell in response to selective energization and deenergization of said coil; said slug having a coaxial passage through its entire length; said coaxial passage including an internally threaded passage section;

5) a push rod, said push rod being externally threaded along at least a portion of its length and threadedly engaging said threaded passage section of said slug such that an upper end of said push rod extends above said slug; and



6) a thrust member affixed to said upper end of said push rod; and

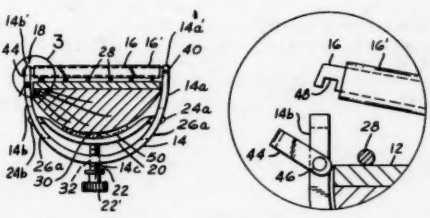
B) a mounting plate structure for supporting said striker solenoid assemblies within a keybed such that each given said solenoid assembly is juxtaposed with respect to an individual keytail in order that said thrust member thereof can deliver a key-impelling stroke to the keytail when said coil of said given solenoid assembly is energized; said mounting plate structure having upper and lower faces and an array of apertures extending between said upper and lower faces, each of said apertures being positioned to reside beneath an individual keytail when installed in the piano keybed and dimensioned to receive said outer shell of a single one of said solenoid assemblies.

5,081,894

CAPO

Bryan R. Paige, 3016 Sand Dune, Hillsdale, Mich. 49242

Filed Jun. 18, 1990, Ser. No. 540,287
Int. Cl.[5] G10D *3/00*
U.S. Cl. 84—318 **18 Claims**



1. A capo for a musical instrument having a fretboard with a plurality of strings, said capo comprising:

a yoke, said yoke being substantially semi-circular in shape, said yoke having an apex, said yoke forming a first fork on one side of said apex and a second fork on the other side of said apex, said first fork terminating at a first fork end, said second fork terminating at a second fork end, said first fork having a first guide slot, said second yoke having a second guide slot;

a bar having a first end and a second end, said first end of said bar being pivotally connected with said first fork end;

clasp means connected to said yoke adjacent said second fork end for releasably locking said bar onto said second fork end;

a foot having a first end and a second end;

tightening means connected with said yoke at said apex and also connected to said foot for selectively moving said foot toward said bar and away from said apex;

a first guide member connected to said first end of said foot, said first guide member extending through said first guide slot for guiding said foot; and

a second guide member connected to said second end of said foot, said second guide member extending through said second guide slot for guiding said foot.

5,081,895

KEYBOARD

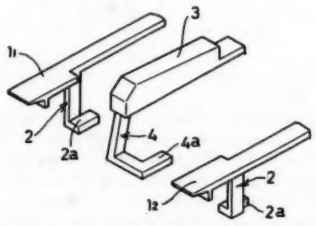
Masanori Katsuta, Iwata, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka, Japan

Filed Jul. 10, 1990, Ser. No. 550,626

Claims priority, application Japan, Aug. 11, 1989, 93874

Int. Cl.[5] G10C *3/12*

U.S. Cl. 84—433 **7 Claims**



1. A keyboard in which a stopper portion of an upper limit stopper of a black key detours a stopper portion of an upper limit stopper of an adjoining white key such that said stopper portion of said black key is disposed so as to lie further away from said black key than does said stopper portion of said white key and side by side with said stopper portion of said white key.

5,081,896

MUSICAL TONE GENERATING APPARATUS

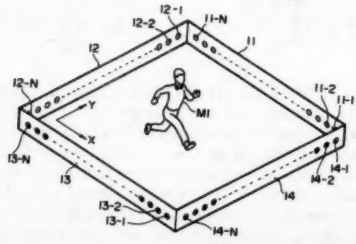
Teruo Hiyoshi; Hideo Suzuki; Eiichiro Aoki; Akira Nakada; Shinji Kumano; Kunihiko Watanabe, and Masao Sakama, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 117,683, Nov. 5, 1987, abandoned. This application Mar. 7, 1990, Ser. No. 492,303

Claims priority, application Japan, Nov. 6, 1986, 61-264172; Nov. 18, 1986, 61-274346; Nov. 18, 1986, 61-274347; Nov. 18, 1986, 61-274348

Int. Cl.[5] G10H *15/00*

U.S. Cl. 84—600 **21 Claims**



1. A musical tone generating apparatus for generating a musical tone corresponding to a detected speed of a person moving on a generally horizontal surface, comprising:

(a) first means comprising a first pair of a first light emitting element and a first light receiving element and a second pair of a second light emitting element and a second light receiving element, each of the first and second light emitting elements and each of the first and second light receiving elements being arranged such that a light emitted from each light emitting element can be received by each light receiving element thereby defining first and second light paths, wherein the first and second light paths are substantially parallel to the surface, an output level of each light receiving element being varied when the light emitted from each light emitting element is shut out by the person, a predetermined interval being formed between said first and second light emitting elements and between the first and second light receiving elements as well, whereby output levels of the first and second light receiving elements are sequentially varied when the person passes through a path formed between the first and second light emitting elements and the first and second light receiving elements;

(b) second means for generating a detection signal representing the speed of the person based on the predetermined interval and a period between a first time when the output level of the first light receiving element varies and a second time when the output level of the second light receiving element varies; and

(c) means for generating a musical tone signal corresponding to the detection signal, the musical tone signal representing at least one of a tone pitch, a tone volume and a tone color of a musical tone to be generated.

5,081,897

ELECTRONIC MUSICAL INSTRUMENT HAVING WAVEFORM MEMORY

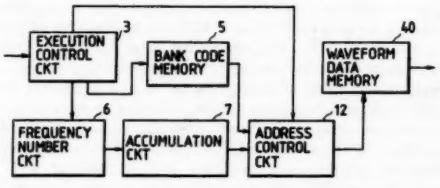
Kiyomi Takauji, Shizuoka, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka, Japan

Filed Feb. 13, 1990, Ser. No. 479,492

Claims priority, application Japan, Feb. 20, 1989, 1-39768; Feb. 26, 1989, 1-44270; Feb. 26, 1989, 1-44271

Int. Cl.[5] G10H *7/00*

U.S. Cl. 84—604 **6 Claims**



1. An electronic musical instrument comprising:

a key board having a plurality of keys, each of which when actuated defines respective key information,

a plurality of tone selection switches for setting desired tones,

a control means responsive to said key information and tone information obtained by scanning said keys and said tone selection switches for supplying control signals,

a plurality of musical sound generators each of which corresponds to respective key information,

a frequency number means, responsive to a control signal from said control means, for generating a frequency number corresponding to the key information corresponding to a respective one of said musical sound generators,

accumulation means for receiving and accumulating output values of said frequency number means,

a waveform data memory for storing waveform data accord-

ing to an address corresponding to the key information, said waveform data being readout to generate desired musical sound from a respective one of said musical sound generators, said waveform data memory comprising a plurality of different types of memories, and

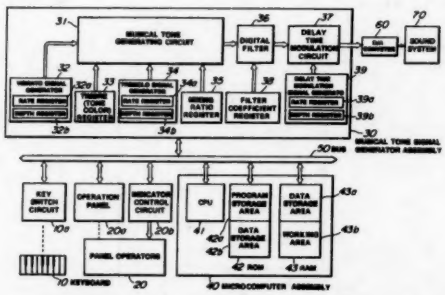
an address control means for converting the address corresponding to the key information into an address format for a location of one of said plurality of different types of memories in said waveform data memory in which said desired waveform data is stored, said address control means being adapted to be controlled by said control means to change said address format for access to said waveform data memory corresponding to a respective one of said musical sound generators.

5,081,898

APPARATUS FOR GENERATING MUSICAL SOUND CONTROL PARAMETERS

Junichi Fujimori, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 295,466, Jan. 10, 1989, abandoned. This application Sep. 12, 1990, Ser. No. 582,789
Claims priority, application Japan, Jan. 11, 1988, 63-4363
Int. Cl.[5] G10H *7/00*
U.S. Cl. 84—622 **15 Claims**



1. An apparatus for generating musical sound control parameters for supplying said musical sound control parameters to a musical sound generating apparatus for the purpose of utilizing said musical sound control parameters for forming musical sound at said musical sound generating apparatus, the apparatus comprising:

(a) timbre selecting operators;

(b) timbre parameter generating means for supplying timbre parameters corresponding to timbre selected by said timbre selecting operators to said music sound generating apparatus; and

(c) effect control parameter generating means for supplying plural effect control parameters representing which of various effects are to be imparted to the musical sound and the degree of each effect to be imparted to the musical sound, the parameters varying in response to timbre selected by said timbre selecting operators, whereby effects of different degree can be provided in response to selection of different timbres.

5,081,899

RECIPROCATING ORNAMENTAL DISPLAY ASSEMBLY

Jack Hou, P.O. Box 78-5, and I-Pin Feng, both of Taipei, Taiwan, assignors to Jack Hou, Taipei, Taiwan

Filed Sep. 12, 1990, Ser. No. 581,313
Int. Cl.[5] G10F *1/06*
U.S. Cl. 84—95.2 **9 Claims**

1. An ornamental display assembly comprising:

a) a base member;

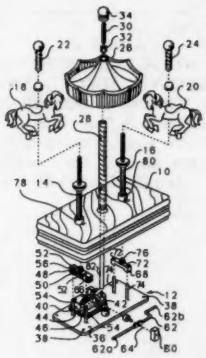
b) a music box mechanism having a rotating power output shaft;

c) a crank mechanism operatively associated with the rotating output shaft, the crank mechanism having a cam element located eccentrically with respect to the rotating output shaft;

d) a first follower member operatively associated with the cam element such that rotation of the output shaft causes reciprocating motion of the first follower member;

e) support means located on the base member;

f) a rocker arm having first and second ends pivotally attached to the support means between its first and second ends having the first end operatively associated with the first follower member such that reciprocating motion of the first follower member causes oscillating motion of the rocker arm about a pivot axis;



g) a second follower member operatively associated with the second end of the rocker arm such that the oscillation of the lever arm causes reciprocating motion of the second follower member; and,

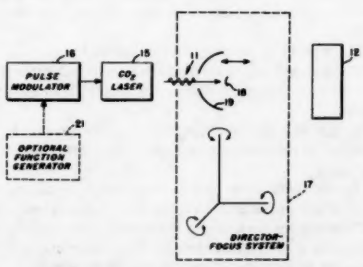
h) at least one ornamental object operatively connected to each follower member so as to undergo reciprocating movement with the follower members.

5,081,900

RESONANCE DAMAGE PROCESS

Rodney R. Buntzen, 9380 Lemon Ave., La Mesa, Calif. 92041, and Robert R. Hammond, 535 Savoy, San Diego, Calif. 92106

Filed Feb. 23, 1973, Ser. No. 337,030
Int. Cl.[5] B64D *1/04*; F41F *5/00*; G01K *10/00*
U.S. Cl. 89—1.11 **4 Claims**



1. A method of generating destructive high pressures within a body of solid material comprising the steps of:

generating a beam of coherent photon energy;

modulating said beam to produce a train of pulses having a pulse duration and recurrence rate that is a predetermined function of the physical properties of the body of solid

material including thickness along a predetermined axis, said step of modulating including interruption of the beam to produce pulse intervals corresponding to the time of two-way transit of sound within the solid body plus a time interval corresponding to the delay afforded secondary components of the shock wave due to the plastic deformation thereof resulting from the energy transfer of previous pulses so as to reinforce said secondary pulses to a predetermined level; and

directing said beam of modulated coherent photon energy along said predetermined axis to impinge the body of solid material to produce momentum transfer shock waves therein.

5,081,901

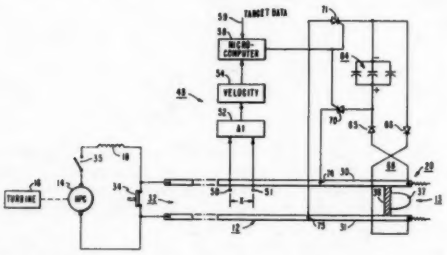
ELECTROMAGNETIC LAUNCHER WITH MUZZLE VELOCITY ADJUSTMENT

George A. Kemeny, Wilkins Township, Allegheny County, and Daniel W. Deis, Churchill Boro, both of Pa., assignors to Westinghouse Electric Corp., Pittsburth, Pa.

Filed Jun. 29, 1987, Ser. No. 67,561

Int. Cl.[5] F41B *6/00*

U.S. Cl. 89—8 **5 Claims**



1. An electromagnetic projectile launcher comprising:

A) a pair of generally parallel conducting rails having a breech end and a muzzle end;

B) a source of high current;

C) an armature for conducting current between said rails and for accelerating a projectile along said rails;

D) means connected to said breech end of said rails to initiate injection of said high current into said rails and armature;

E) velocity measuring means operable to obtain an indication of projectile velocity at a position between said breech and muzzle ends of said rails;

F) means for comparing said velocity indication with a predetermined desired projectile velocity;

G) armature acceleration modification means responsive to said velocity indication comparison to modify the velocity of said projectile prior to exiting said muzzle end of said rails;

H) said velocity measuring means including:

i) first and second spaced apart sensors positioned proximate said rails in the direction of travel of said projectile,

ii) each of said sensors being operable to provide an output signal in response to passage of said armature and projectile,

iii) means responsive to said output signals of said sensors to obtain an indication of actual projectile velocity;

I) said means for comparing said projectile velocity indication with a desired projectile velocity being operable to generate at least one corrective control signal;

J) means for applying said corrective control signal top said armature acceleration modification means;

K) said armature acceleration modification means including:

i) a source of stored energy.

ii) first and second controlled switch means connecting said source of stored energy to said rails and being responsive to said control signal to cause injection of said stored energy into said rails;

L) said means for comparing being operable to selectively and timely provide a first or second control signal;

M) said first switch means being responsive to said first control signal to cause injection of said stored energy into said rails in a manner to boost projectile exit velocity;

N) said second switch means being responsive to said second control signal to cause injection of said stored energy into said rails in a manner to retard projectile exit velocity.

5,081,902

APPARATUS FOR PROVIDING RELIEF TO A WORKING CHAMBER

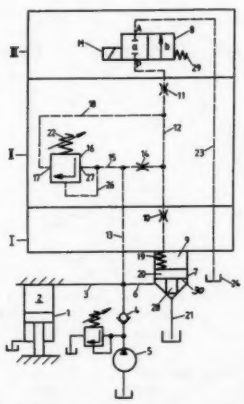
Georg Rausch, Lohr, Fed. Rep. of Germany, assignor to Mannesmann Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Jul. 9, 1990, Ser. No. 549,945

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1989, 39222553

Int. Cl.[5] F15B *13/02*

U.S. Cl. 91—47 **10 Claims**



1. An apparatus for providing relief to a working chamber filled with a highly pressurized hydraulic liquid, said apparatus comprising:

a pilot controlled 2-way, 2-position poppet valve,

said valve having a control chamber and control spool together with closing body,

a pilot valve,

a throttle means arranged between said control chamber of said 2-way, 2-position poppet valve and the pilot valve,

wherein the surface area of the 2-way, 2-position control spool, which is subjected to the control or pilot pressure, is larger than the surface area of the control spool which is subjected to a user pressure, and the pilot pressure acts in a closing direction of the control spool while the user pressure acts in an opening direction of said control spool, and

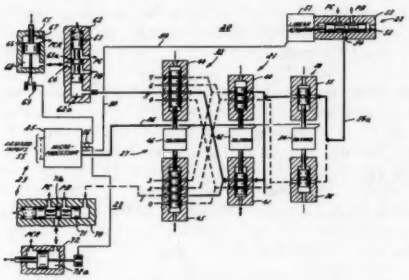
a pressure relief valve having an input and an output, said pressure relief valve being connected via said input to said working chamber and further via said output to a control conduit extending between the control chamber of the 2-way, 2-position poppet valve and the pilot valve.

5,081,903

MULTIPLEXED HYDRAULIC CONTROL SYSTEM WITH MULTI-BIT BINARY SELECTOR SIGNAL CONTROL

John W. Wardle, Roscoe; Dale W. Sievert, Freeport, and James L. Leeson, deceased, late of Rockford, all of Ill. by Elizabeth J. Leeson, on behalf of the Deceased , assignors to Woodward Governor Company, Rockford, Ill.

Filed Jan. 9, 1990, Ser. No. 462,739
Int. Cl.[5] F15B *9/09*
U.S. Cl. 91—361 17 Claims



1. A multiplexed hydraulic control system having a plurality of channels for individually controlling the positions of a plurality of actuators in the respective channels in accordance with a corresponding plurality of electrical control signals, the control system comprising the combination of:

a source of multi-bit binary selector signals for individually addressing the respective channels;

multiplexer means having a common input and a plurality of outputs individually and selectively connectible to the input, means coupling the multiplexer outputs to the respective channels for controllably positioning the actuators in the channels, the multiplexer means having a selector input coupled to the source of binary selector signals for selectively connecting the multiplexer input with the output coupled to the addressed channel;

means for modulating a hydraulic signal in accordance with selected ones of the plurality of electrical control signals and applying said modulated hydraulic signal to the channel addressed by the multiplexer means; and

control means for coordinating the modulating of the hydraulic signal with the selector signals produced by the source of binary selector signals thereby to couple hydraulic signals to the channels for controlling the positions of the actuators in said channels in accordance with the associated plurality of electrical signals.

5,081,904

LOCKING VALVE AND FLOW CONTROL VALVE ASSEMBLY

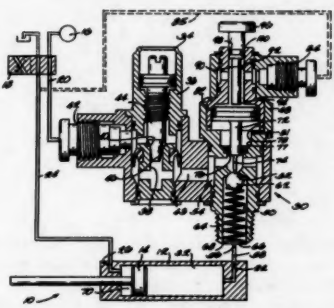
Edward R. Horn, Oconomowoc; Derek Hopkinson, Menomonee Falls, and Michael C. Allen, Pewaukee, all of Wis., assignors to Aladdin Engineering & Mfg., Inc., Brookfield, Wis.

Continuation of Ser. No. 400,331, Aug. 30, 1989, abandoned.
This application Sep. 25, 1990, Ser. No. 590,600
Int. Cl.[5] F15B *13/04*
U.S. Cl. 91—420 12 Claims

1. A locking valve assembly for inhibiting the movement of a piston of a fluid cylinder upon interruption of a source of fluid pressure supplied to the fluid cylinder, and wherein the fluid cylinder includes first and second ports and slideably houses the piston for movement between extended and retracted positions, and wherein the source of fluid pressure alternately is supplied to the first and second ports, the locking valve assembly comprising:

a flow control valve, including a flow control valve body having an inlet port in fluid communication with the source of fluid pressure and an outlet port, the flow control valve being adapted to control the fluid flow from the first port of the fluid cylinder and to the second port of the fluid cylinder;

a locking valve body having a locking valve bore and wherein the locking valve bore includes first, second, and third portions, the flow control valve body and the locking valve body being joined together with the first portion of the locking valve bore being in fluid communication with the flow control valve outlet port, the second portion of the locking valve bore being in fluid communication with both the first portion of the locking valve bore and with the first port of the fluid cylinder, and the third portion of the locking valve bore being in fluid communication with both the first portion of the locking valve bore and with the second port of the fluid cylinder, and a locking valve seat between the first and second portions of the locking valve bore;



a locking valve member moveably housed in the second portion of the locking valve bore and selectively engageable with the locking valve seat to prevent fluid flow between the first portion of the locking valve bore and the second portion of the locking valve bore;

means for biasing the locking valve member against the locking valve seat;

a plunger moveably housed in the first portion of the locking valve bore and selectively engageable with the locking valve member to push the locking valve member away from the locking valve seat;

a plunger piston slideably and sealingly housed in the third portion of the locking valve bore, the plunger piston urging the plunger into engagement with the locking valve member when the source of fluid pressure is supplied to the second port of the fluid cylinder thereby urging the locking valve member away from the locking valve seat.

5,081,905

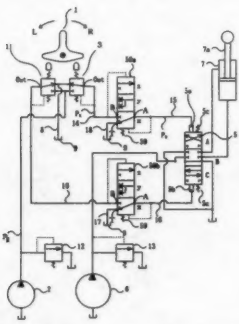
HYDRAULIC PILOT OPERATION CIRCUIT AND VALVE FOR QUICKLY DISCHARGING OIL

Takashi Yagyu; Soutarou Tanaka, both of Ushiku, and Kimio Katsuki, Ibaragi, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

PCT No. PCT/JP88/00166, § 371 Date Oct. 17, 1988, § 102(e) Date Oct. 17, 1988, PCT Pub. No. WO88/06241, PCT Pub. Date Aug. 25, 1988
PCT Filed Feb. 18, 1988, Ser. No. 265,457
Claims priority, application Japan, Feb. 20, 1987, 62-23787[U]; Feb. 26, 1987, 62-27682[U]
Int. Cl.[5] F15B *11/08*
U.S. Cl. 91—461 8 Claims

1. A hydraulic pilot operation circuit having a first pressure source connected to a hydraulic control valve located outside of a cabin of a construction machine and a second pressure source connected to a remote control valve disposed in the

cabin of the construction machine and producing a hydraulic pilot pressure in proportion to an operation amount of said remote control valve, said hydraulic control valve being disposed between said first hydraulic pressure source and a hydraulic actuator and adapted to control the flow rate and the direction of oil supplied to said hydraulic actuator, said hydraulic control valve being changed over by said hydraulic pilot pressure supplied from said remote control valve through a pilot line to a pilot port of said hydraulic control valve, and wherein said pilot line has a length such that if the hydraulic pilot pressure produced by said remote control valve decreased to a tank pressure and acted directly upon said pilot



port of said hydraulic control valve, the pressure at said pilot port will not immediately decrease to said tank pressure, said hydraulic pilot operation circuit comprising:

change-over means provided between an output port of said remote control valve and said pilot port of said hydraulic control valve, said change-over means connecting said hydraulic pilot pressure output from said output port of said remote control valve to said pilot port of said hydraulic control valve when said remote control valve is operated to an active position, and said change-over means connecting said pilot port to a tank when said remote control valve is operated to a neutral position.

5,081,906

MECHANISM, MOTOR PUMP, INCORPORATING PISTONS SUPPORTING, ROLLERS FOR ABUTMENT OF SAID PISTONS ON A CAM

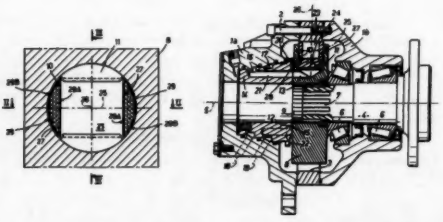
Gilles Lemaire, Margny les Compiegne, and Douglas Beeson, Paris, both of France, assignors to Poclain Hydraulics, France

Filed Sep. 10, 1990, Ser. No. 579,775

Claims priority, application France, Sep. 14, 1989, 89 12068

Int. Cl.[5] F01B *13/06*; F04B *1/04*

U.S. Cl. 91—491 **12 Claims**



1. A hydraulic mechanism, motor or pump, comprising:

a cam;

a cylinder-block mounted to rotate with respect to the cam;

a plurality of cylinders arranged in this cylinder-block;

a plurality of pistons each mounted to slide inside a cylinder along an axis of slide of piston;

a plurality of rollers for rolling abutment of the pistons on the cam, each roller being mounted on a piston, rotating about a roller axis perpendicular to the axis of slide of said piston by means of a bearing for rotation, being axially defined by two transverse faces, and being capable of penetrating, at least partially, inside the cylinder in which this piston is slidably mounted, the end of the piston, in which is formed the bearing for rotation of the roller, comprising two recesses each corresponding to the space included between the cylindrical surfaces of the roller, and between the inner surface of the cylinder and one of the transverse faces of the roller, and defining a lower part for each recess thereon, said space being open in the upper part of the piston where the cylindrical surface of the roller projects from the piston; and

two wedging pieces for each roller, which are each disposed in one of said two recesses between the corresponding end of the roller and the inner face of the cylinder on which said wedging piece abuts, in order to ensure axial holding in position of the roller parallel to its axis of rotation, wherein, along the axis of the piston, at least one of the two wedging pieces extends up to the lower part of the recess, so as to move with the piston during the extension of the piston out of the cylinder.

5,081,907

HYDROSTATIC DISPLACEMENT ENGINE

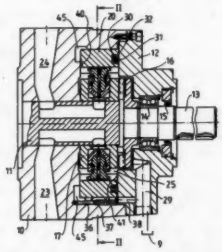
Gunther Nagel, Steinheim; Franz Arbogast, and Peter Peiz, both of Heidenheim, all of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Jul. 3, 1990, Ser. No. 547,679

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1990, 3921790

Int. Cl.[5] F01B *1/06*

U.S. Cl. 91—497 **10 Claims**



1. A hydrostatic displacement engine, comprising:

a housing including a housing interior;

a stroke ring located within said housing interior and having a first axis;

a rotating cylinder block having a plurality of cylinders therein and a plurality of radially reciprocable pistons in said cylinders that slide on said stroke ring and displace fluid in said cylinders;

a working fluid comprising said cylinders, and inlet channel, an outlet channel and passages connecting the inlet and outlet channels to said cylinders;

means for shifting said stroke ring transverse to the axis of rotation of said cylinder block, so that the spacing between said first axis and the axis of rotation of said cylinder block is variable, said means for shifting comprising a control means mounted directly on said housing and having a pressurized fluid actuated member that positively engages said stroke ring to selectively shift said stroke ring transverse to the axis of rotation;

said housing interior having a radially outer area that is situated generally radially outside and contiguous to said stroke ring, said stroke ring being sealed relative to a

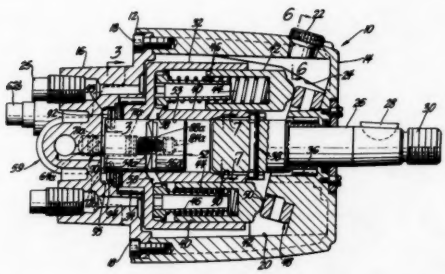
radially inner area of said housing interior that is situated generally radially within said stroke ring, the fluid that pressurizes said fluid actuated member also communicating with the radially outer area of the housing interior to cause a pressure above atmospheric pressure to build up in said radially outer area, the radially inner area being connected with a low pressure area.

5,081,908

HYDRAULIC PUMP HAVING FLOATING SPIGOT VALVE

James B. McBeth, N. Vancouver, and Eric Fetchko, Burnaby, both of Canada, assignors to Teleflex Incorporated, Limerick, Pa.

Filed May 8, 1991, Ser. No. 697,094
Int. Cl.[5] F01B *1/00*
U.S. Cl. 91—499 **22 Claims**



1. A hydraulic pump assembly (10) for a marine steering system for remotely actuating a submerged steering element, said assembly comprising: a housing (12); a compression chamber (40) disposed in said housing (12); a piston (40) slidably disposed in said compression chamber (40); actuator means (48) for reciprocating said piston in said compression chamber (40) in response to a rotary input; timing valve means (52) minutely orbitally disposed in said housing (12) for alternately transferring hydraulic fluid to and from said compression chamber (40); transfer valve means (59) extending through said housing (12) and fixed relative to said minutely orbital timing valve means (52) for conveying hydraulic fluid between the steering system and said timing valve means (52); and characterized by annular elastically deformable seal means (70) interconnecting said fixed transfer valve means (59) and said minutely orbital timing valve means (52) over an annular surface area for permitting minute orbital movements of said timing valve means (52) while perfecting and maintaining an annular fluid tight seal with said transfer valve means (59) such that said timing valve means (52) freely minutely orbits without leakage of hydraulic fluid between said fixed transfer valve means (59).

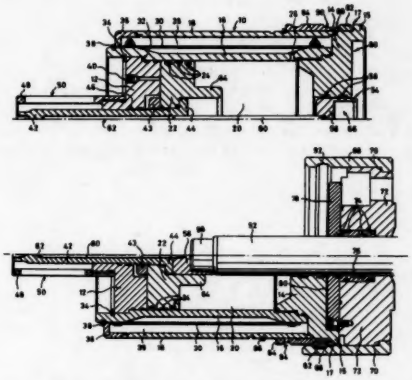
5,081,909

RELEASABLE LATCH MECHANISM FOR ATTACHING AN ACTUATOR TO A VALVE

R. Hart, Northolt, Great Britain, assignor to National Oilwell (U.K.) Ltd., Cheshire, England

Filed Jul. 16, 1990, Ser. No. 554,058
Claims priority, application United Kingdom, Jul. 21, 1989, 8916744
Int. Cl.[5] F15B *15/22*
U.S. Cl. 92—14 **6 Claims**

1. An actuator comprising a housing having a chamber and a piston slidably received within the chamber, the housing including two concentric barrels, an inlet port to the chamber for the introduction of an operating fluid to cause the piston to slide within the chamber and a resiliently expandable section for accommodating operating fluid displaced during the operating stroke of the piston, wherein the housing is provided with means for releasably attaching the actuator relative to a stem to



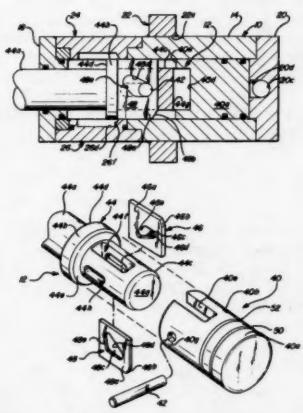
be actuated and a plug for sealing an aperture to the chamber and receiving the stem, the plug moving into the chamber to enable the piston to act upon the stem via the plug.

5,081,910

LOCKING LINEAR ACTUATOR

Frank D'Ascenzo, Jr., 2015 Bellaire, Royal Oak, Mich. 48067

Continuation of Ser. No. 507,675, Apr. 10, 1990, abandoned.
This application May 28, 1991, Ser. No. 707,425
Int. Cl.[5] F15B *15/26*
U.S. Cl. 92—20 **17 Claims**



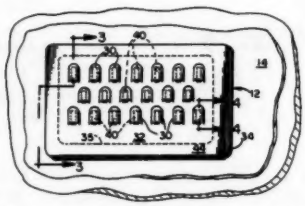
1. A power cylinder assembly comprising:

a cylinder having sealed central axial bore, inlet and outlet ports communicating with said sealed bore, and slots in the cylindrical wall of said sealed bore opening regularly inwardly into the sealed bore; and

a piston assembly positioned in said sealed bore and including a piston mounted for axial movement in said bore in response to the selective introduction of pressurized hydraulic fluid into said bore through said ports, a piston rod having a lost motion connection to said piston within said bore and extending sealingly out of said bore through one end wall of said cylinder, and lock means carried by said piston assembly within said bore and including a pair of flat lock plates mounted in confronting side-by-side rela-

tion in said sealed bore and means operative to move said plates radially outwardly in opposite directions within said bore, in response to lost motion movement between said piston and said piston rod, into locking engagement with said slots to lock said piston rod relative to said cylinder.

5,081,911
VENT FOR SHRINK FILM PACKAGING
James E. Talbot, Wynnewood, Pa., assignor to Protect-A-Boat of New Jersey, Inc., Springfield, Pa.
Filed Feb. 2, 1990, Ser. No. 473,763
Int. Cl.[5] F24F *7/00*
U.S. Cl. 454—370 **10 Claims**



1. Venting means for allowing air to move between the interior and exterior of a shrink film envelope enclosing an object, said venting means comprising:

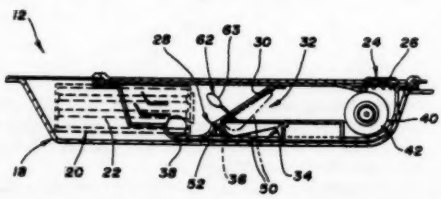
a generally flat plate having oppositely facing interior and exterior surfaces and further having a center portion and a peripheral portion;

an array of holes extending through the center portion of the plate whereby fluid communicationa is established between the interior and exterior plate surfaces;

an array of cowls integral with and positioned on the exterior surface of the plate, each of said cowls formed of an inflexible material, each cowl for shielding one of the holes, said holes and cowls being sized, shaped, and oriented to inhibit entry of fluids through the holes and into the evelope interior while allowing generally unrestricted air circulation between the envelope interior and exterior; and

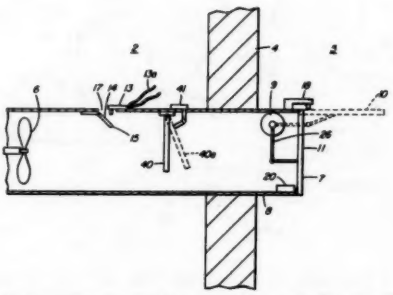
an adhesive located on the peripheral portion of the plate, whereby the plate can be fastened to the envelope.

5,081,912
VEHICLE VENT
Alain J-M. Clenet, Santa Barbara, Calif., assignor to Asha Corporation, Santa Barbara, Calif.
Filed Feb. 5, 1991, Ser. No. 650,929
Int. Cl.[5] B60H *1/26*
U.S. Cl. 454—136 **14 Claims**



1. A vehicle vent for exhausting air from a vehicle occupant compartment to the environment, the vent comprising: a housing having an inlet through which air enters the vent from the vehicle occupant compartment and also having an outlet through which the air exits from the vent to the environment; the housing having a divider that defines an upper opening through which the air flows from the inlet to the outlet; a float valve movable between open and closed positions with respect to the upper opening of the divider; the housing defining a collection chamber located toward the outlet from the divider such that water entering the vent from the environment accumulates in the collection chamber to close the float valve; the housing having at least one lower drain passage that extends from the collection chamber through the divider to a location toward the inlet from the divider such that water can flow therethrough at a limited rate even when the float valve is closed; and the housing having a drain located on the side of the divider toward the inlet so as to receive water from the drain passage for draining from the vent to the ground.

5,081,913
AIR VENT CLOSURE SYSTEM
Hubert Gervais, 29 Portneuf, P.O. Box 841, R.R. 1, Cantley, Quebec, Canada
Filed May 18, 1990, Ser. No. 525,028
Int. Cl.[5] F04D *25/14;* F16K *31/12*
U.S. Cl. 454—343 **11 Claims**



1. A closure means on an outlet for a forced air exhaust conduit which is positioned to convey air from within a closed structure to a region exterior to such structure, comprising:

(1) an actuating motor means for positioning said closure in either a closed or open state in response to electrical current provided by an electrical source;

(2) electrical switch means for providing said motor with said electrical current;

(3) an over-pressure sensor system responsive to an over-pressure condition in said conduit with respect to ambient pressure external to said conduit and connected to activate said switch, such sensor system comprising:

(a) a bleed-outlet formed in said conduit through which air tends to escape when said over-pressure condition exists; and

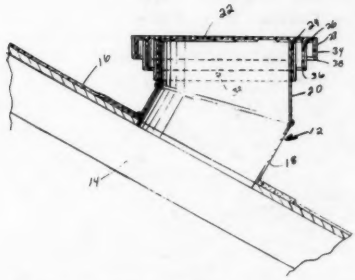
(b) a pressure-sensing means positioned to swing between a first, over-pressure detecting position closing said bleed-outlet, and a second, no-pressure detecting position where said bleed-outlet is not closed,

wherein said electrical switch is activated by said pressure sensing means to control said motor means.

5,081,914
ROOF VENT CAP
Augustine G. Mejia, 3217 Lariat La., Corpus Christi, Tex. 78415
Filed Mar. 21, 1990, Ser. No. 496,773
Int. Cl.[5] F23L *17/02;* F16L *55/10*
U.S. Cl. 454—367 **1 Claim**

1. In combination, a cylindrical roof vent pipe extending through and above a roof structure and having an upper end terminating above the roof structure and a lower end in communication with an attic space to exhaust heated air from the attic space, a cap forming a closure for the upper end of the roof vent pipe, said cap comprising an imperforate member overlying and engaging the upper end of the roof vent pipe and forming a closure for the upper end thereof, and means on said

member to removably secure said member to the roof vent pipe, said imperforate member being a generally flat circular plate having a diameter slightly greater than the diameter of the roof vent pipe, said means securing said member to the roof vent pipe including a depending cylindrical flange unitary with said plate in close telescopic relation to the exterior of a portion of the upper end of the roof vent pipe, said flange including a plurality of anchor screws anchoring the flange and plate to the roof vent pipe to enable complete separation of the



flange and plate from the roof vent pipe, and at least one additional depending cylindrical flange on said plate in outward concentric spaced relation to said first mentioned flange, said additional flange including a plurality of anchor screws, each additional flange being shorter in height than the first mentioned flange, said anchor screws on the first mentioned flange being located adjacent the lower edge thereof and below the bottom edge of the additional flange to enable radial access to the anchor screws on the first mentioned flange.

5,081,915

MACHINE FOR BREWING HOT BEVERAGES

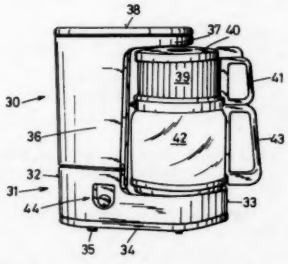
Klaus Beumer, Solingen, Fed. Rep. of Germany, assignor to Robert Krups Stiftung & Co. KG., Solingen, Fed. Rep. of Germany

Filed Feb. 2, 1990, Ser. No. 474,153

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1989, 3904378

Int. Cl.[5] **A47J** *31/057;* **A23F** *5/00*

U.S. Cl. 99—281 **21 Claims**



1. A machine for brewing hot beverages, comprising a housing including a hollow base and having a top portion provided with an opening; a preassembled unit located in said base and including a warming plate disposed at said opening and having an underside provided with a retaining element, an upper side and a marginal portion, sealing means located at the upper side of said plate at said marginal portion, a substantially ring-shaped electrical insulator at said marginal portion, detent means connecting said insulator with said plate, an electric heater adjacent the underside of said plate, and means for biasing said heater against said plate including a first portion engaging said retaining element and a second portion engaging said insulator, said biasing means comprising a one-piece elongated strip-shaped metallic bridge having a central section of a first width and two ends of a second width less than said first width, said ends forming part of said second portion of said biasing means and said first portion of said biasing means including two tongues having confronting surfaces defining a passage for said retaining element, said retaining element including a post having a peripheral surface which is engaged by the surfaces of said tongues; and means for coupling said unit to said base.

5,081,916

SUPPORT ELEMENT, CLAMP ELEMENT AND STOP ELEMENT FOR THE PREPARATION AND/OR IMPLEMENTATION OF A COOKING PROCESS OF PIECES OF MEAT, ESPECIALLY POULTRY

Franz Kühling, Apfelweg 6, D-2842 Lohne; Rolf Grimm, Berberitzenweg 6, D-2903 Bad Zwischenahn, and Gottfried Rieselmann, Achtern Diek 34, D-2848 Vechta, all of Fed. Rep. of Germany

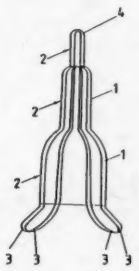
PCT No. PCT/EP88/00038, § 371 Date Sep. 25, 1989, § 102(e) Date Sep. 25, 1989, PCT Pub. No. WO88/05278, PCT Pub. Date Jul. 28, 1988

PCT Filed Jan. 21, 1988, Ser. No. 423,465

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1987, 3702090; Jan. 24, 1987, 3702091; Jan. 24, 1987, 8701167[U]; May 26, 1987, 3717671; Dec. 23, 1987, 3743787

Int. Cl.[5] **A47J** *43/18*

U.S. Cl. 99—419 **6 Claims**



1. A support element for supporting fowl during storage and for use during cooking, said fowl having a through cavity, the element having an overall conical shape and being insertable in the through cavity of the fowl, and the element having a first generally cylindrical section, a second conical tapered section, and a third generally cylindrical section, said first section having a larger diameter compared to the diameter of said third section, said first section merging into said second section which defines a shoulder on which the fowl can rest by virtue of its bone structure.

5,081,917

APPARATUS FOR AUTOMATICALLY PRODUCING CONFECTIONERY CAKES OR THE LIKE

Fumihiko Masuda, Saitama, Japan, assignor to Shin Nihon Machine Mfg. Co., Ltd., Saitama, Japan

Filed Dec. 5, 1989, Ser. No. 446,039

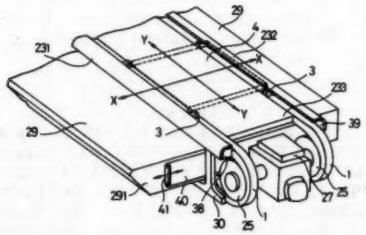
Claims priority, application Japan, Oct. 11, 1989, 1-264621

Int. Cl.[5] **A21C** *5/00, 11/00;* **A23P** *1/00*

U.S. Cl. 99—450.2 **13 Claims**

1. An apparatus for automatically producing confectionery cakes, comprising at least one station for processing or shaping a plurality of cakes respectively placed on corresponding upper plates, drive and guide pulleys rotatably provided underneath said station or stations, a pair of parallel endless conveyor belts passed around said drive and guide pulleys, each of said conveyor belts having a forward run and a return run, and holders provided at a predetermined pitch on said

conveyor belts for keeping the upper plates on said conveyor belts, said upper plates each being displaced in the lengthwise direction of said conveyor belts and widthwise direction perpendicular to said lengthwise direction for processing or shaping the cakes, in which said apparatus further comprises a lower frame rotatably carrying said drive and guide pulleys at opposite ends, and a cover covering said lower frame and having a top surface slidably supporting the forward run of said conveyor belts and covering the return run thereof.

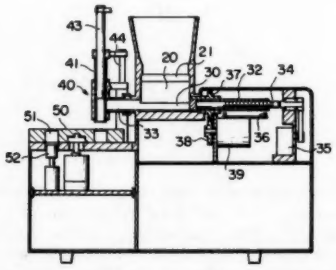


5,081,918

MATERIAL SUPPLY APPARATUS

Yasunori Tashiro, and Daiji Tomiyama, both of Utsunomiya, Japan, assignors to Rheon Automatic Machinery Co., Ltd., Utsunomiya, Japan

Filed Mar. 8, 1991, Ser. No. 666,290
Claims priority, application Japan, Mar. 9, 1990, 2-24025
Int. Cl.[5] A23G *3/00*
U.S. Cl. 99—450.6 **9 Claims**



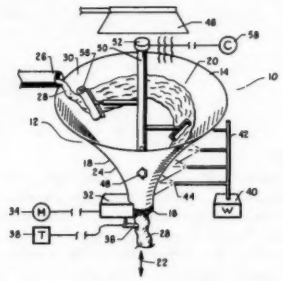
1. A food material supply apparatus comprising a hopper containing a food material to be supplied, two driven rollers provided in the hopper and spaced apart by a predetermined distance from each other thereby forming a passage therebetween for the food material to move downward, each roller being provided with at least a slot along the diameter thereof, a plate longer in cross section than the diameter of the roller and slidably inserted into each slot, means to cause each plate to extend from each roller into the passage for the food material to propel it downward, a groove substantially semicircular in cross section and provided between the rollers in the bottom of the hopper and extending parallel to the axis of each roller, a hollow cylinder rotatably and complementarily fitted in the groove and formed with an axial opening having a length substantially equal to that of the rollers thereby leaving a semicircular wall along the opening, the cylinder being positioned so that the semicircular wall thereof is received in the groove while the food material is propelled downward by the plates and, after the food material is filled in the groove, being rotated 180° to form a cylindrical space surrounded by the semicircular wall of the cylinder and the wall of the groove, a first piston arranged to reciprocate in the cylinder in synchronization with the rotation of the cylinder so that it advances when the cylindrical space is formed, thereby extruding the food material in the cylindrical space, and which then retracts to its original position, a food material extruding device connected to the delivery end of the cylinder, and a turntable located under the food material extruding device and having pockets for receiving the food material extruded from the food material extruding device.

5,081,919

CONE-SHAPED APPARATUS FOR TEMPERING BOILED CANDY

David B. Van Dongen, Hackettstown, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 29, 1989, Ser. No. 373,756
Int. Cl.[5] A23G *3/08*; B29B *7/52*
U.S. Cl. 99—483 **8 Claims**



1. An apparatus for tempering a molten mass of hard boiled candy material, comprising:

an inverted truncated cone having an open top, and open bottom, an inner surface, and an outer surface, said inner surface having an upper rim portion;

rotating means coupled to said cone for rotating said cone about its longitudinal axis;

feed means for feeding said candy material onto said upper rim of said cone; and

means associated with said cone for kneading said molten candy material as it moves from said upper rim down said inner surface of said rotating cone and out said open bottom, upon rotation of said cone, said means for kneading including a fixed stator coaxially positioned inside said cone, radially extending arms connected to said stator and rollers connected to said radially extending arms.

5,081,920

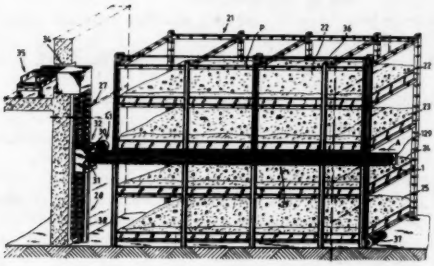
APPARATUS FOR TRANSPORTING AND TRIMMING MUSHROOMS

Josef Kühlmann, Königstr. 51, D-4419 Laer, Fed. Rep. of Germany

Filed Jun. 7, 1990, Ser. No. 534,740
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1989, 3924870
Int. Cl.[5] A23N *15/00, 15/02*
U.S. Cl. 99—639 **19 Claims**

1. Apparatus for transporting and trimming fungi wherein a stem carries a pileus at one end and a mycelium at the other end, comprising a conveyor defining an elongated path having a series of differently inclined sections; a plurality of receptacles carried by said conveyor and having openings arranged to receive the stems of discrete fungi while affording access to the stems in the regions of the respective mycelia, said conveyor having means for supporting said receptacles for angular movement about substantially horizontal axes and each of said receptacles being in frictional engagement with the conveyor so that it resists angular movements about the respective axis; means for driving said conveyor so as to advance said receptacles along said path in a predetermined direction; means for preventing changes of orientation of said receptacles during

advancement between successive sections of said path; means defining a charging station which is adjacent a first portion of said path and where said receptacles accept fungi for advancement along said path; and a trimming device adjacent a second



portion of said path downstream of said first portion and having means for severing the stems of fungi in the regions of the respective mycelia while the receptacles containing fungi advance along the second portion of said path.

5,081,921

PNEUMATIC PRESS

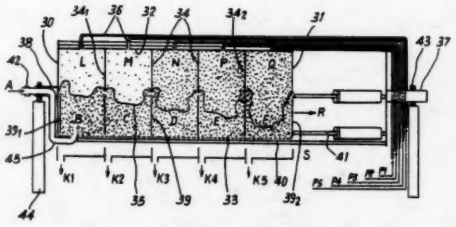
James Gregoire, Cognac, France, assignor to Etablissements Gregoire S.A., France

Division of Ser. No. 335,709, Apr. 10, 1989, abandoned. This application Jun. 7, 1990, Ser. No. 534,817

Claims priority, application France, Apr. 11, 1988, 88 04761

Int. Cl.[5] B30B *9/02, 5/02, 9/22*

U.S. Cl. 100—37 **13 Claims**



1. A method of operation of a rotating drum pneumatic press, the method comprising the steps of:

loading a quantity of mass to be pressed through a loading duct into a first pressing compartment adjacent a closed end of said drum;

pressurizing an axial pressure cell radially opposite said first pressing compartment to press a membrane against said mass to be pressed in the direction of a perforated sidewall portion of said drum;

evacuating said pressure cell;

axially translating said first pressing compartment in the direction of an open end of the drum with actuator means to move said mass to be pressed axially along the drum to a position opposite a second axial pressure cell;

rotating said drum such that the radial positions of said first pressing compartment and said axial pressure cells are reversed;

axially translating said first pressing compartment back in the direction of the closed end of the drum to align it with said first axial pressure cell; and

rotating said drum to return said first pressing compartment and said axial pressure cells to their original radial positions, such that said quantity of mass to be pressed is transferred to a second pressing compartment aligned with said second axial pressure cell.

5,081,922

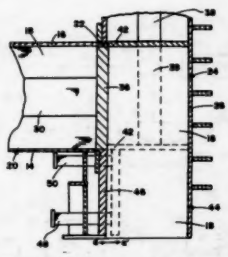
DEVICE FOR CONTROLLING THE DISCHARGE OF A BALE FROM A SOLID WASTE BALING MACHINE

Brodie W. Rudd, Jr., Advance, and James K. Hannah, Tobaccoville, both of N.C., assignors to C&M Company, Winston-Salem, N.C.

Filed Jan. 22, 1991, Ser. No. 644,097

Int. Cl.[5] B30B *15/16, 15/32*

U.S. Cl. 100—50 **5 Claims**



1. In a solid waste baling machine of the type having a compacting chamber, a charging passage having an exit end in communication with the compacting chamber, a compacting ram head reciprocable between extended and retracted positions in the charging passage and defining in an extended position a sidewall of the compacting chamber, a discharge passage having a longitudinal axis, which discharge passage is in communication with the compacting chamber perpendicular to the exit end of the charging passage and having a sidewall adjacent the exit end of the charging passage and a discharge ram head reciprocable between extended and retracted positions in the compacting chamber and discharge passage and defining in a retracted position an end wall of the compacting chamber, the improvement wherein:

the discharge passage sidewall adjacent the exit end of the charging passage is mounted for incremental lateral movement perpendicular to the longitudinal axis of the discharge passage inwardly and outwardly with respect to the discharge passage from a predetermined position in alignment with the exit end of the charging passage.

5,081,923

METHOD OF CREATING A REGISTERED PATTERN ON A METAL COIL AND ASSOCIATED APPARATUS

Philip J. LaMantia, Verona; George Hardick, and Ralph Campbell, both of Pittsburgh, all of Pa., assignors to Enamel Products & Plating Company, McKeesport, Pa.

Division of Ser. No. 502,107, Mar. 29, 1990, Pat. No. 5,037,665. This application Dec. 24, 1990, Ser. No. 633,009

The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.

Int. Cl.[5] B44B *5/00*

U.S. Cl. 101—32 **18 Claims**

1. A method for creating a registered pattern on a metal coil comprising

providing pattern applicator roll means and drive means for rotating said applicator roll means,

moving said metal coil sequentially into contacting relationship with said applicator roll means,

establishing a pattern on said moving coil by said pattern applicator roll means by deforming said metal coil by embossing,

measuring the pattern length and comparing the same with the desired pattern length, and

adjusting the speed of rotation of said pattern applicator roll

means if the measured pattern length departs from the desired patterned length by a predetermined amount.

13. Apparatus for creating a registered pattern on a metal coil comprising

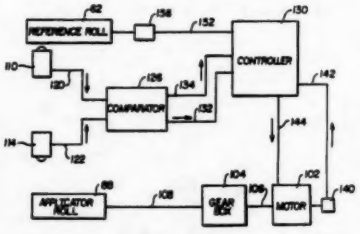
pattern applicator roll means for applying a pattern sequentially to said coil through deformation of said metal coil using metal embossing means,

means for moving said metal coil into contact with said pattern applicator roll means,

drive means for rotating said pattern applicator roll means,

coil line speed monitoring means for monitoring the line speed of the metal coil,

pattern length monitoring means for measuring the pattern length,



motor speed monitoring means for measuring speed of rotation of the motor,

microprocessor means for receiving information from said coil line speed monitor means, said pattern length monitoring means and said motor speed monitoring means,

said microprocessor means containing information regarding the desired pattern length, and

said microprocessor means having means for employing all said information to determine whether an adjustment to said motor speed should be made and initiating such an adjustment if the desired pattern length departs from the measured pattern length by a predetermined amount.

5,081,924

MIMEOGRAPHIC PRINTING MACHINE

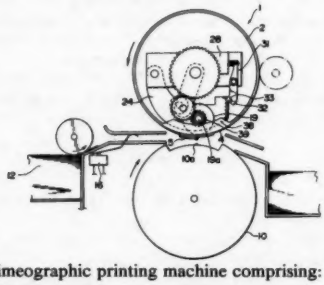
Yoshiharu Ohinata, Toride, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Filed Feb. 25, 1991, Ser. No. 659,947

Claims priority, application Japan, Mar. 6, 1990, 2-52773

Int. Cl.[5] B41L *13/00*

U.S. Cl. 101—120 **7 Claims**



1. A mimeographic printing machine comprising:

a frame:

a rotary cylindrical drum having outer and inner circumferential surfaces, said outer circumference surface being adapted to support a stencil thereon, and perforations for passage of ink, said cylindrical drum being rotatable on said frame with the stencil supported thereon;

ink supplying means situated inside said cylindrical drum;

a lower pusher roller rotatably supported on said frame under said cylindrical drum adapted to hold a paper sheet between said lower pusher roller and said cylindrical drum to move the paper sheet forwardly;

an inside pusher roller having a drive shaft, said inside pusher roller being movably retained in said cylindrical drum and contacting the inner circumferential surface of said cylindrical drum for pushing said cylindrical drum toward said lower pusher roller;

a drive gear driven for rotation together with said cylindrical drum;

a pivotable support arm disposed inside said cylindrical drum;

an intermediate gear mounted on said support arm and meshing with said drive gear, said intermediate gear being movable in a rotating direction of said drive gear in response to pivotal movement of said support arm; and

an inside pusher gear mounted on the drive shaft of said inside pusher roller and meshing with said intermediate gear, said inside pusher roller being pushed, while rotating, against the inner circumferential surface of said cylindrical drum.

5,081,925

SELECTIVE DRIVE FOR A DAMPING UNIT METERING ROLLER IN AN OFFSET PRINTING PRESS

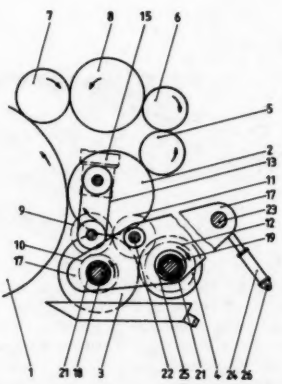
Roland Höll, Weiterstadt; Herbert Rebel, Rodgau, and Peter Hummel, Offenbach am Main, all of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Fed. Rep. of Germany

Filed Jul. 16, 1990, Ser. No. 554,150

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1989, 3923350

Int. Cl.[5] B41L *25/00*

U.S. Cl. 101—148 **2 Claims**



1. A selective drive for a damping unit metering roller having a journal in an offset printing press having a damping fluid ductor roller having a journal which transfers damping fluid as a film to at least one inking roller in engagement with a printing plate on a plate cylinder of the printing press and wherein the thickness of the damping fluid is controlled by the engagement of the metering roller with the ductor roller, comprising in combination means including a pair of levers rotationally supporting the metering roller and mounted for pivotal movement around the axis of the ductor roller, means including a variable speed motor and clutch for driving the ductor roller and metering roller independently of the plate cylinder, said driving means also including a first driven gear secured to the journal of the ductor roller, a second driven gear secured to the journal of the metering roller, a first intermediate gear meshing with the first driven gear and being drivingly connected to the variable speed motor and clutch, and a second

intermediate gear meshing with the second driven gear and being selectively engageable with and disengageable from the first intermediate gear to selectively drive the metering roller therefrom, and the metering roller being disposed for peripheral driving engagement by the ductor roller when the second intermediate gear is disengaged from the first intermediate gear.

5,081,926

METHOD AND APPARATUS FOR THE RAPID ESTABLISHMENT OF AN INK ZONE PROFILE IN AN OFFSET PRINTING PRESS

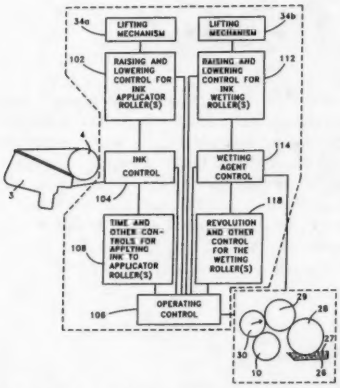
Anton Rodi, Leimen, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Jun. 19, 1990, Ser. No. 540,612

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1989, 3919922; Apr. 28, 1990, 4013740

Int. Cl.[5] B41F *7/04, 7/26*

U.S. Cl. 101—211 **17 Claims**



1. A method for establishing an ink zone profile in an offset printing press, the printing press being for the production of successive prints of an image provided on a printing plate, the successive prints of the image being formed by the deposition of an ink on a printing medium during a printing operation of the offset printing press, the ink zone profile being established in the printing press prior to the execution of the printing operation of the offset printing press, the method including the step of providing the printing press, the printing press comprising a plate cylinder for receiving the mounting thereon of the printing plate, an ink reservoir for supplying the ink, an ink roller train comprising at least one ink applicator roller for transferring at least a portion of the ink supplied by the reservoir to the printing plate mounted on the plate cylinder, an ink metering apparatus for metering ink from the ink reservoir to the ink roller train, a wetting agent reservoir for supplying a wetting agent, and a wetting roller train comprising at least one wetting agent applicator roller for transferring at least a portion of the wetting agent supplied by the wetting agent reservoir to the printing plate mounted upon the printing cylinder, said method comprising the steps of:

metering the ink, from said ink reservoir and through said ink metering apparatus, to said ink roller train;

operating said ink roller train to transport the ink metered through said ink metering device to the printing plate mounted on the plate cylinder;

operating said wetting agent roller train to transport the wetting agent from the wetting agent reservoir to the printing plate mounted on the plate cylinder;

during said operation of said ink roller train, and during said operation of said wetting agent roller train, and prior to said printing operation of said printing press, maintaining said at least one ink applicator roller and said at least one wetting agent applicator roller in uninterrupted contact with said printing plate mounted on the plate cylinder for a determinate period of time to thereby transfer fluid from said at least one ink applicator roller and said at least one wetting agent applicator roller to said printing plate;

initiating said printing operation of said printing press;

completing said printing operation of said printing press;

said method comprising the further step of, during the establishment of said ink zone profile, reducing the flow of wetting agent transported from the wetting agent reservoir to the printing plate mounted on the printing cylinder to a flow of wetting agent which is substantially less than the flow of wetting agent transported during the subsequent printing operation of said printing press.

5,081,927

ROTARY PRINTING PRESS WITH DEVICE FOR ENGAGING OR DISENGAGING A RUBBER-COVERED CYLINDER WITH AN IMPRESSION CYLINDER AND/OR A PLATE CYLINDER

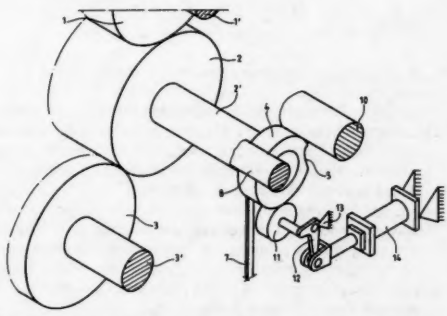
Hans-Georg Jahn, Wiesenbach, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Aug. 7, 1990, Ser. No. 564,174

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1989, 3926087

Int. Cl.[5] B41F *7/04, 5/16*

U.S. Cl. 101—218 **2 Claims**



1. In a rotary printing press having a pair of cylinders consisting of an impression cylinder and a plate cylinder, and a rubber-covered cylinder adjacent the pair of cylinders, a device for bringing the rubber-covered cylinder into and out of engagement with at least one of the pair of cylinders, the rubber-covered cylinder being mounted on a shaft, comprising a substantially circular ring turnably disposed on the shaft of the rubber-covered cylinder, two circumferentially rounded bracing stops disposed adjacent said ring, said bracing stops being spaced from one another with a middle location therebetween, said ring being spring-biased in a direction towards the middle location between said two circumferentially rounded bracing stops and being formed with an indentation at a section of the circumference thereof, said ring being turnable on the shaft so as to move said section of said circumference thereof formed with said indentation into a position opposite one of said bracing stops for bringing the rubber-covered cylinder out of engagement with the impression cylinder, said section formed with said indentation being formed as an insert channel for accommodating therein one of said pair of circumferentially rounded bracing stops, the other of said pair of bracing stops being in continual engagement with the circular circumference of said ring and being displaceable by remote control for disengaging the rubber-covered cylinder from the plate cylinder without turning said ring, said other bracing stop also forming a support location for introducing the circumferen-

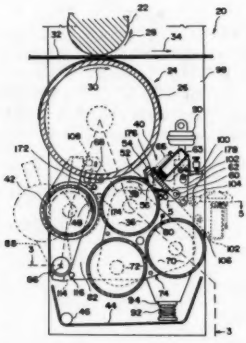
tially rounded one bracing stop into said insert channel in an operating phase wherein the rubber-covered cylinder is disengaged from the impression cylinder, as well as in an operating phase wherein the rubber-covered cylinder is disengaged from both the impression cylinder and the plate cylinder.

5,081,928

MULTIPLE INK ROLL SYSTEM FOR FLEXOGRAPHIC PRINTING STATIONS

John R. Harrison, Baltimore, Md., assignor to Ward Holding Company, Inc., Wilmington, Del.

Filed Jul. 23, 1990, Ser. No. 556,887
Int. Cl.[5] B41F *31/04, 31/08*
U.S. Cl. 101—351 **28 Claims**



1. A flexographic printing apparatus, comprising:
a main frame;
a printing cylinder rotatably supported by the main frame;
a subassembly comprising a plurality of anilox rolls rotatable about parallel spaced-apart axes, said subassembly being rotatable relative to said main frame about an axis parallel to and between said spaced-apart axes;
means for securing said subassembly in selected positions to enable any selected one of said anilox rolls to be brought into an operative position for cooperating with said printing cylinder for printing;
means for supplying ink to be selected one of said anilox rolls when in said operative position; and
said anilox rolls each having a different surface screen providing different printing qualities in dependence upon the particular anilox roll selected.

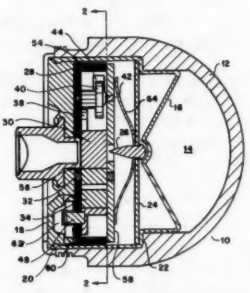
5,081,929

PROJECTILE HAVING A MOVABLE INTERIOR FUZE

William J. Mertens, 901 W. 21st St., Connersville, Ind. 47331

Continuation-in-part of Ser. No. 421,429, Oct. 12, 1989, abandoned. This application Nov. 19, 1990, Ser. No. 618,272
Int. Cl.[5] F42C *1/06*
U.S. Cl. 102—273 **8 Claims**

1. A fuze for a projectile, wherein said projectile comprises essentially a tube-like structure having a defined central longitudinal axis, a defined inside diameter, ID, a defined aft-end of said projectile, a defined nose-end of said projectile which is essentially capped and which also holds a fuze activating pin means inside said projectile joined to the nose-end so that said pin means is held essentially along said longitudinal axis and facing in the direction of said aft-end, said fuze comprising a planar, disc-like fuze body having a defined diameter, D, a defined thickness, W, and defined opposite flat faces each face circular shaped with a defined center point, surrounded on one of said faces by a defined concentric central region having a defined central region radius, R, and whereby the said fuze body is normally positioned by spring means within said projectile to be essentially plane perpendicular to said projectile longitudinal axis, the fuze body diameter being smaller relative to said projectile inside diameter, sufficient to permit free sliding of said fuze body inside the projectile in the direction towards said nose-end, and whereby the face having said central region faces in the said nose-end direction, and whereby the center of said face is always less than a distance, X, from said longitudinal axis, where $X \leqq R/\sqrt{3}$ and whereby the parameters of fuze body thickness, fuze body diameter, and of said projectile inside diameter are so related that the said fuze body is capable when sufficient force is applied to urge said



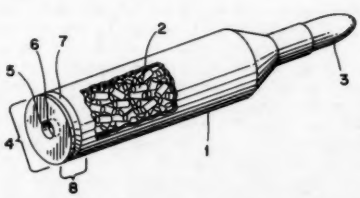
spring means, of tilting inside said projectile at an angle, α, up to $\pm 45°$ off the normal position where the fuze body would be essentially plane perpendicular to the said projectile longitudinal axis, and whereby said fuze is so arranged that it will detonate when the central region of the face in the direction of the nose-end, comes into contact with said pin means, whereby upon a projectile impact when said fuze body by inertia of motion slams into said pin means, contacting same with said central region, such contract will thereby lead to a fuze detonation.

5,081,930

GUN PROPELLANT CONTAINING AMMONIUM AZIDE AND AN INERT CASING

Laurence O. Williams, Orlando, Fla., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Mar. 13, 1990, Ser. No. 492,903
Int. Cl.[5] C06B *45/00*; C06D *5/00, 5/06*
U.S. Cl. 102—292 **27 Claims**



1. A gun propellant comprising ammonium azide in finely divided form and at least one conventional propellant and/or explosive composition in a casing having a surface in contact with the ammonium azide that is inert to said ammonium azide.

5,081,931

SPIN STABILIZED CARRIER PROJECTILE PROVIDED WITH A METAL DRIVING BAND

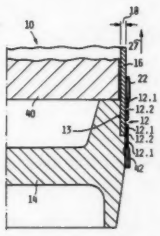
Günter Frye, Erkrath; Klaus-Dietmar Karius, Jüchen; Heinz-Josef Kruse; Achim Sippel, both of Ratingen; Jürgen Meyer, Cologne, and Michael Primus, Ratingen, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Jan. 3, 1991, Ser. No. 635,826

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1990, 4000167

Int. Cl.[5] F42B *12/62, 14/02*

U.S. Cl. 102—489 11 Claims



1. A spin stabilized carrier projectile to be fired from a rifled gun barrel of a given caliber, said projectile comprising: a thin-walled shell having a wall thickness equal to or less than 0.05 times the caliber of the gun barrel; a projectile base connected to a rear end of said shell and partially overlapped by said rear end of said shell so that said base radially supports said shell in the overlapped region; a metal driving band disposed on outer surfaces of said base and of said shell in said overlapped region; and, a plastic ram ring disposed on said outer surface of said shell in front of said metal driving band in a region of said projectile shell which is not supported by said projectile base.

5,081,932

AERIAL TRAMWAY INSTALLATION

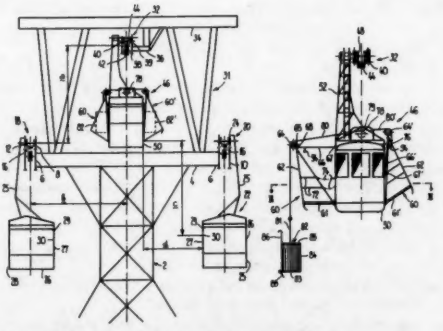
Gottfried Hofmann, Kiesen, Switzerland, assignor to Von Roll Transportsysteme AG, Thun, Switzerland

Filed May 21, 1990, Ser. No. 526,014

Claims priority, application Switzerland, May 23, 1989, 01937/89

Int. Cl.[5] B61B *12/00*

U.S. Cl. 104—112 17 Claims



1. An aerial tramway installation comprising:

two spaced apart terminals;

a transport track interconnecting said terminals;

a rescue track extending along said transport track and elevated with respect thereto;

transport cars having transport cabins movable along said transport track and;

a rescue car having a rescue cabin movable along said rescue track, a rescue vessel and means for lowering and lifting said rescue vessel between said rescue cabin and a transport car on said transport track.

5,081,933

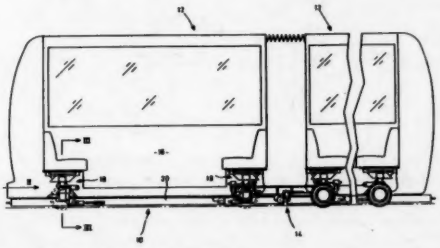
LCTS CHASSIS CONFIGURATION WITH ARTICULATED CHASSIS SECTIONS BETWEEN VEHICLES

Steven P. Lapp, and Peter E. Timan, both of Sydenham, Canada, assignors to UTDC Inc., Kingston, Canada

Filed Mar. 15, 1990, Ser. No. 494,220

Int. Cl.[5] B61D *17/00*

U.S. Cl. 105—3 12 Claims



1. A chassis for an articulated vehicle comprising a pair of chassis sections each having a hinge intermediate its ends to connect inboard and outboard portions of said chassis section for pivotal movement about a transverse horizontal axis, a beam member extending between adjacent inboard portions of said chassis sections and supported at spaced locations by a first pair of wheelsets, pivot means connecting each of said inboard portions of said chassis sections to said beam at a substantially common location intermediate said first pair of wheelsets to permit limited universal pivotal movement between said beam and chassis sections, a second pair of wheelsets each of which is associated with a respective one of said outboard portions of said chassis sections and located at the distal end thereof, and support means extending from said beam to the inboard portion of each chassis section to locate said inboard portion vertically relative to said beam.

5,081,934

RAILWAY BOGIE WITH ARTICULATED SIDE FRAMES

Michel D. De Ro, Nivelles, and Pierre Hecq, Mont-Sur-Marchienne, both of Belgium, assignors to S.A. Constructions Ferroviaires et Metalliques, Belgium

PCT No. PCT/BE88/00014, § 371 Date Nov. 13, 1989, § 102(e) Date Nov. 13, 1989, PCT Pub. No. WO88/08802, PCT Pub. Date Nov. 17, 1988

PCT Filed May 11, 1988, Ser. No. 444,170

Claims priority, application Belgium, May 13, 1987, 8700527

Int. Cl.[5] B61F *5/38*

U.S. Cl. 105—168 15 Claims

1. A rail vehicle guide and support arrangement including a bogie having independent wheels and comprising:

a cross beam (3) fastened to a vehicle body (2) so as to be perpendicular to a vertical plane containing the longitudinal axis (X X') of the vehicle, in proximity to one end of said body (2),

two longitudinal members (4) each having at least first and second wheels (6,9), and

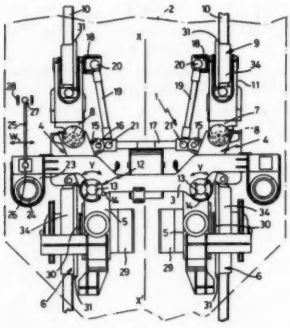
first articulation means for articulating said longitudinal members;

wherein said longitudinal members, in the longitudinal direction are mounted on said first articulation means (12) carried by said crossbeam (3) on each side of said vertical

plane, so as to enable said at least first and second wheels (6,9) carried by the longitudinal members (4) to follow curves and to pass over uneven parts of a track; and

wherein said longitudinal members (4) have a second articulation means;

each of said longitudinal members comprising a longitudinal frame member (5) articulated to the crossbeam (3) about



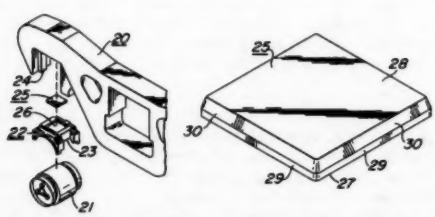
said first articulation means and extended by a directional arm (7) which is articulated about said second articulation means, comprising a substantially vertical pivot (8), to the longitudinal frame member (5) and which has at its free end said second wheel (9), each directional arm (7) being connected to a brace (17) by means of a rod (19) to form a deformable quadrilateral which ensures a correct orientation of the wheels relative to a rail.

5,081,935

RAILROAD CAR VERTICAL ISOLATOR PAD

Michael J. Pavlick, Blue Bell, Pa., assignor to Transit America, Inc., Philadelphia, Pa.

Filed Apr. 9, 1990, Ser. No. 506,248
Int. Cl.[5] B61F *5/30*
U.S. Cl. 105—224.1 **17 Claims**



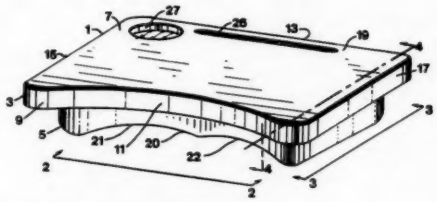
13. For use with railroad cars having trucks and roller bearing adaptors in which the trucks include sideframes and the tops of the roller bearing adaptors are formed with a pocket, an elastomeric vertical isolator pad for placement between the roller bearing adaptors of a railroad car and the car truck sideframes, said pad being formed of an elastomer having a melting point not lower than 500° Fahrenheit and having a Shore hardness durometer in the range of 50 to 70, said pad being configured to have a base surface, an upper surface, and upper and lower sidewall portions, said base surface and lower sidewall portions being sized to fit snugly within the pocket on the top of the bearing adaptor to prevent shifting of said pad within the pocket, said upper sidewalls portions of said pad extending upward beyond the upper surface of the bearing adaptor to said pad upper surface, which latter is configured for surface engagement with an overlying part of the truck sideframe, said pad upper sidewall portions being angled inwardly from the upper edges of said pad lower sidewall portions to said pad upper surface.

5,081,936

COMPRESSIBLE DESK ARRANGEMENTS

Gerald L. Drieling, 1300 W. Medicine Lk. Dr., #120, Plymouth, Minn. 55441

Filed Nov. 22, 1989, Ser. No. 440,870
Int. Cl.[5] A47B *23/00*
U.S. Cl. 108—43 **14 Claims**



1. A lap desk comprising:

(a) a laterally compressible, resilient, desk top portion comprising a front wall, an opposite back wall, first and second generally opposite side walls, and an upper surface, wherein:

(i) said desk top portion, including said upper surface, comprising a flexible cellular plastic material having a compression deflection value within a range of about 0.2 to 35 psi at 25%;

(ii) said desk top portion, including said upper surface, being capable of compressing under a stress directed against at least one of said front or back walls, and subsequently rebounding, after said stress is removed, to at least about 95% of its original size from at least about a 10% compression of its length between said front and back walls; and

(iii) said desk top portion, including said upper surface, being coated with a flexible elastomeric skin such that the upper surface is sufficiently adapted to support writing activity thereon; and

(b) a compressible, resilient, pedestal portion attached to said desk top portion to form a lap desk; said pedestal portion being coated with a flexible elastomeric skin.

5,081,937

SYSTEM FOR TREATING WASTE MATERIAL IN A MOLTEN STATE

Takashi Ishida; Yoshikazu Ueda; Teruji Kubota; Misao Igarashi; Norichika Tanaka, and Yasuhiko Kamijo, all of Tokyo, Japan, assignors to Chiba City & Tsukishima Kikai Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 460,579, Jan. 30, 1990. This application Jul. 31, 1990, Ser. No. 560,110
Int. Cl.[5] F23G *5/06*
U.S. Cl. 110—246 **3 Claims**

1. In an apparatus for treating waste material in a molten state wherein said waste material including combustible material and incombustible material is burnt at a high temperature to produce waste gas and molten combustion ash or molten slag and said molten combustion ash or said molten slag is cooled to receive final treating, the improvement comprising:

a cylindrical dust removing unit including an inner wall surface, a substantially tangential waste gas inlet port on the upstream side thereof and a dust-free waste gas outlet port on the downstream side thereof,

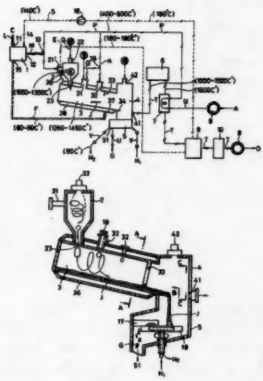
a furnace discharge section provided with an exhaust gas outlet port on the side wall thereof,

a slag cooling section provided with a rotary slag cooler at the lower end part thereof, and communicating with said furnace discharge section,

a waste gas passage extending into the dust removing unit in the substantially tangential direction relative to the inner wall surface of said dust removing unit and communicat-

ing with said exhaust gas outlet port of said furnace discharge section,

said dust removing unit being mounted such that the upstream side is located below the downstream side so as to



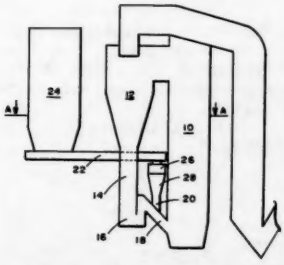
allow the dust removing unit to assume an inclined attitude whereby the molten slag flows down countercurrent to said waste gas by its own dead weight and falls down from the lowest part of the inner wall surface of said dust removing unit to said rotary slag cooler.

5,081,938

METHOD AND APPARATUS FOR CONTROLLED BIDIRECTIONAL FEEDING OF PARTICULATE MATTER

Harry Ollila, Kauniainen, Finland, assignor to A. Ahlstrom Corporation, Karhula, Finland

Filed Dec. 20, 1990, Ser. No. 631,726
Int. Cl.[5] F23H *11/00*
U.S. Cl. 110—269 **20 Claims**



1. Apparatus for effecting controlled feeding of solid material, comprising:

a housing having an upper portion, and at least one inlet for solid material in said upper portion;

a drag chain conveyor with flights for conveying solid material longitudinally in the housing, said conveyor being primarily disposed within said housing, and having an upper run and a lower run;

an intermediate plate disposed between said upper run and said lower run and cooperating with said flights of said upper run so that said conveyor conveys solid material along said intermediate plate in a first direction;

a bottom plate associated with said housing for cooperating with the flights of said lower run so that the flights of said lower run convey solid material along said bottom plate in a second direction opposite said first direction;

at least first and second outlets for solid material from said housing, said outlets spaced from each other in said first direction, and disposed on opposite sides of said at least one inlet; and

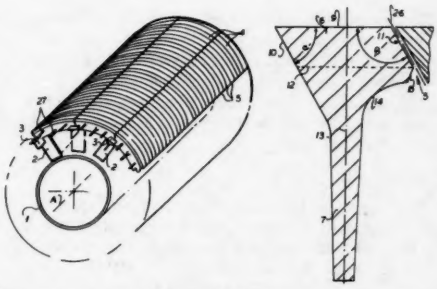
means defining at least one opening in said intermediate plate between said at least one inlet and said first outlet for allowing a portion of the solid material being conveyed in said first direction to flow through said opening to said lower run of said conveyor.

5,081,939

ROLLER-TYPE GRATE AND BAR THEREFOR

Anton Esser, Kaarst, Fed. Rep. of Germany, assignor to Deutsche Babcock Anlagen Aktiengesellschaft, Krefeld, United Kingdom

Division of Ser. No. 521,047, May 3, 1990. This application Jan. 8, 1991, Ser. No. 638,611
Claims priority, application Fed. Rep. of Germany, May 10, 1989, 8905822; May 10, 1989, 8905823
Int. Cl.[5] F23K *3/18*
U.S. Cl. 110—276 **5 Claims**



1. A rotary-grate drum comprising:

a support centered on and rotatable about a longitudinal axis and having a plurality of angularly equispaced and longitudinally extending guides; and

a plurality of arcuate grate bars having ends fitted to the guides with the bars extending angularly between the bars, each bar having an enlarged head and a fin projecting inwardly therefrom, the head being formed with an end face directed outward from the fin and a pair of substantially parallel side faces extending inward obliquely from the end face at an angle of between 45° and 75° to the end face, each bar forming with the adjacent bar an outwardly obliquely open gap.

5,081,940

WASTE DISPOSAL METHOD AND APPARATUS

Takehiko Motomura, Funabashi; Hitoshi Hagihara, Tokyo, and Satoshi Inoue, Asaka, all of Japan, assignors to Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1990, Ser. No. 610,212
Claims priority, application Japan, Nov. 10, 1989, 1-293351
Int. Cl.[5] F23G *5/00*
U.S. Cl. 110—346 **23 Claims**

1. A method of incinerating refuses, using a main incinerator which combusts the refuses, the main incinerator having an inlet through which the refuses are fed into the main incinerator and an outlet through which the refuses are discharged from the main incinerator, comprising the steps of:

(A) transferring the refuses through the main incinerator;

(B) feeding air into the main incinerator to combust the refuses;

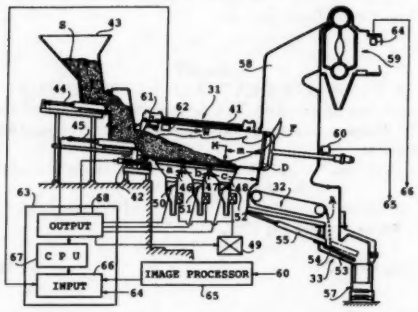
(C) melting ashes produced upon the combustion of the step (B) by use of unburned carbon contained in the ashes;

(D) detecting a temperature of gas at the refuse inlet of the main incinerator;

(E) detecting a point at which the combustion of the step (B)

ends in the main incinerator (which point is called "burn-out point");

(F) determining a relation among an amount of the unburned carbon contained in the ash, the gas temperature at the refuse inlet and the burn-out point; and



(G) adjusting a speed of the refuses transferred through the main incinerator of the step (A) and adjusting a flow rate of air of the step (B) in a manner such that the temperature detected at the step (D) and the point detected at the step (E) fall in respective predetermined ranges to control the amount of the unburned carbon to a desired value.

5,081,941

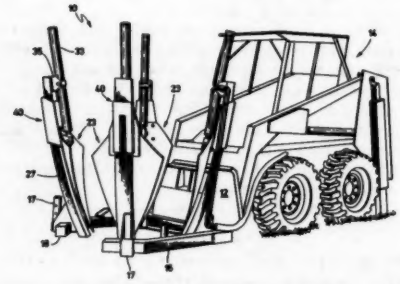
APPARATUS FOR EXCAVATING AND TRANSPLANTING TREES AND THE LIKE

Paul R. Weeks, 6203 W. Nail Rd., Walls, Miss. 38680

Filed Mar. 27, 1990, Ser. No. 500,188

Int. Cl.[5] A01G *23/04*

U.S. Cl. 111—101 **17 Claims**



1. Apparatus for excavating and transplanting trees comprising:

a generally horizontally disposed multi-sided frame defining a substantially enclosed space for overlying and substantially surrounding an area to be excavated;

a plurality of blade assemblies mounted on said frame, each blade assembly including

a tower affixed to and extending upwardly from said frame, said tower being a one-piece construction having a curved shape;

a slide assembly mounted on and capable of sliding movement along said tower, said slide assembly having means mounted therein which contact said tower and on which said sliding movement occurs;

a blade affixed to and movable with said slide assembly, and

power means to actuate said blade and impart reciprocal movement thereto.

5,081,942

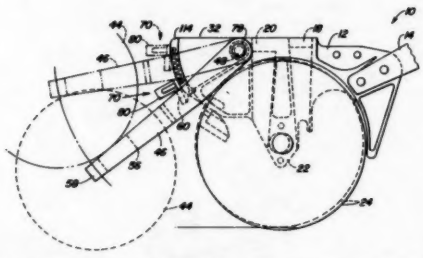
DEPTH ADJUSTING DEVICE FOR A FURROW OPENER

Richard H. Clark, Urbandale, and John D. Long, Ankeny, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Oct. 30, 1990, Ser. No. 607,014

Int. Cl.[5] A01C *5/06*

U.S. Cl. 111—136 **8 Claims**



5. In a furrow opener assembly having an opener body, an adjustable depth furrow opener and a gauge wheel for adjusting the depth of the opener, the opener movable vertically between an upper transport position and a lower field-working position, an adjustment mechanism comprising a fore-and-aft extending gauge wheel arm supporting the gauge wheel, means for pivotally connecting the wheel arm to the body for rocking with respect to the opener about an arm axis, a stop member located radially outwardly of the arm axis and moveable through an arc-shaped path centered on the arm axis for limiting upward rocking of the wheel arm to a preselected rocked position, the body including a notched portion located generally on the arc of a circle with radius centered on the arm axis, means for releasably securing the stop member in the notched portion in one of a plurality of selectable positions for maintaining a preselected opener depth of operation, and wherein the wheel arm is freely rockable downwardly from the stop member when the assembly is in the transport position.

5,081,943

WORK FABRIC FEEDING DEVICE FOR AUTOMATIC SEWING APPARATUS

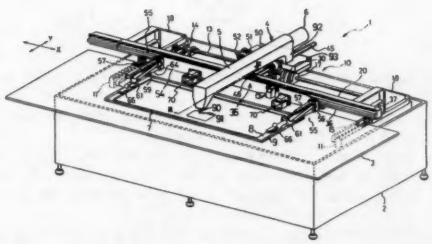
Fumio Nakanishi, Suzuka, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 13, 1991, Ser. No. 669,001

Claims priority, application Japan, May 8, 1990, 2-119614; May 21, 1990, 2-130851

Int. Cl.[5] D05B *21/00*

U.S. Cl. 112—121.12 **15 Claims**



1. A work fabric feeding device for an automatic sewing apparatus including a sewing machine having a column portion, an arm extending from an upper end portion of said column portion in a first direction and a needle bar reciprocally supported at a free end portion of said arm, and a table extending over a moving area of a work fabric to be sewn by said sewing machine, said work fabric feeding device comprising:

guide means for guiding the work fabric on the table, said guide table having two end portions and being arranged directly below said arm and extending in a second direction perpendicular to the first direction;

supporting means for movably supporting said two end portions of said guide means for movement of said guide means in the first direction directly below said arm between said column and said needle bar;

first moving means arranged directly below said arm for moving said guide means in the first direction;

a movable frame movably supported by said guide means for movement in the second direction;

second moving means arranged directly below said arm for moving said movable frame relative to and along said guide means in the second direction, said second moving means including a second driving shaft extending in the first direction and inserted through said column portion of said sewing machine so that said second driving shaft penetrates through and is reciprocally supported by said column portion, a second driving motor for rotating said second driving shaft, and a second converting means for converting rotational motion of said second driving shaft into linear motion of said movable frame in said second direction;

a work fabric holding frame movably mounted on said table for holding a work fabric; and

connecting means for connecting said work fabric holding frame to said movable frame.

5,081,944

WORK FABRIC FEEDING DEVICE FOR AUTOMATIC SEWING APPARATUS

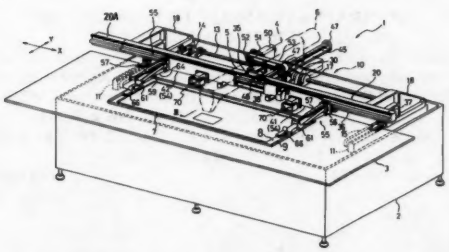
Fumio Nakanishi, Suzuka, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 13, 1991, Ser. No. 669,024

Claims priority, application Japan, May 8, 1990, 2-119614

Int. Cl.[5] D05B *21/00*

U.S. Cl. 112—121.12 **22 Claims**



1. A work fabric feeding device comprising:

a guide means for guiding a work fabric to be sewn, said guide means extending in a first direction;

a first movable frame movably supported by said guide means for movement in the first direction;

a second movable frame movably supported by said guide means for movement in the first direction;

moving means for moving said first and second movable frame along said guide means in the first direction, said first and second movable frames being adjustably attached to said moving means, the attachment of said first and second movable frames to said moving means being adjustable in the first direction; and

lifting means, connected to said first and second movable frames, for lifting a single work fabric holding frame having an open central portion surrounded by a peripheral frame portion, said lifting means including connecting means for detachably connecting said lifting means to the single work fabric holding frame.

5,081,945

ELASTIC TAPE SEWING MACHINE

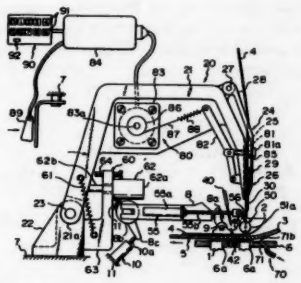
Pantelis Bozoglou, Olching, Fed. Rep. of Germany, assignor to Juki Corporation, Tokyo, Japan

PCT No. PCT/JP88/01339, § 371 Date Jun. 5, 1989, § 102(e) Date Jun. 5, 1989, PCT Pub. No. WO90/07603, PCT Pub. Date Jul. 12, 1990

PCT Filed Dec. 27, 1988, Ser. No. 368,330

Int. Cl.[5] D05B *35/06*

U.S. Cl. 112—121.26 **6 Claims**



1. An elastic tape sewing machine having feed means for feeding a combined body of a fabric and an elastic tape, sewing means for sewing the elastic tape onto the fabric while the fabric and the elastic tape are engaged by said feed means, presser foot means for holding the combined body of the fabric and the elastic tape in engagement with said feed means, elastic tape supply means for supplying elastic tape to said presser foot, said elastic tape supply means including retainer means for retaining the elastic tape by applying a spring force against the elastic tape with an elastic body and for feeding the elastic tape to said presser foot, guide means for guiding the elastic tape fed from said elastic tape supply means to a sewing-ready position between said presser foot means and said feed means, and cutting means for cutting the elastic tape, said machine characterized by:

said retainer means including tape tension regulating means for regulating a tension in the elastic tape, said tape tension regulating means having an intermittent motion means for regulating the spring force applied against the tape by the elastic body and a controller for controlling a number of motions of the intermittent motion mechanism.

5,081,946

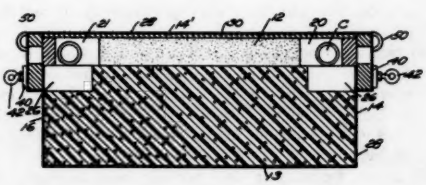
FLOATING DOCK

Urban R. Nannig, 515 Shore Acres Ave., and Douglas W. Nannig, 15 Circle Dr., both of North Kingstown, R.I. 02852

Filed Sep. 11, 1990, Ser. No. 580,481

Int. Cl.[5] B63B *35/44*

U.S. Cl. 114—264 **3 Claims**



1. A floating dock, comprising

(a) a floatation member constituting a monolithic element formed of a foamed polymer, the member having a generally rectangular plan, having vertical sides, corners at the junction of adjacent sides and having a flat top surface, the member being formed with a rabbet having a vertical

surface that terminates at the said top surface and a horizontal surface that terminates at the said vertical sides, recesses formed in the floatation member extending downwardly from the horizontal surface of the rabbet at the corners; and

(b) a dock assembly including a deck plate that rests on the said top surface of the floatation member and includes side wall members that extend downwardly from the deck plate and embrace the vertical sides of the floatation member, the side wall members being spaced from the vertical surface of the rabbet to define a utility service space

each of said recesses in the floatation member defining a space with the side wall members, the side wall members being provided with ports giving access to the rabbet and the said spaces.

5,081,947

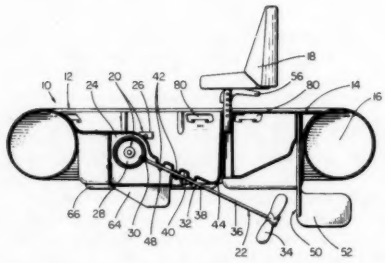
BOAT ASSEMBLY

Wesley G. Holden, 4550 Roswell Rd., Q3, Atlanta, Ga. 30342

Filed Jun. 15, 1990, Ser. No. 538,731

Int. Cl.[5] B63B *7/06*

U.S. Cl. 114—345 **10 Claims**



1. A portable boat assembly for use by an operator comprising:

(a) a bow module having a bottom, a rounded side with an upper portion, a flat side, and an upwardly and outwardly curved flange extending along the upper portion of said bow module rounded side;

(b) a stern module having a bottom, a rounded side with an upper portion, a flat side,

an upwardly and outwardly curved flange extending along the upper portion of said stern module rounded side, and a forward portion;

(c) said bow module and said stern module being interlocked to form a float platform;

(d) an inflatable tube, said inflatable tube surrounding said interlocked bow module and stern module and being seated outwardly of and against each upwardly and outwardly curved flange of said bow module and said stern module for holding said bow module and said stern module together and for providing buoyancy to said float platform;

(e) means for powering said portable boat assembly, said means for powering having a gearbox located within said bow module, said gear box having a propeller shaft cavity extending through said bow module bottom, a propeller shaft with a propeller fixed thereon journaled within said cavity, and pedals;

(f) means for steering said portable boat assembly, said means for steering having a rudder, a recessed slot formed in said stern module bottom, said rudder being partially located within said recessed slot, and a tiller, said tiller being located in said forward portion of said stern module;

(g) and a seat, said seat being located in said forward portion of said stern module, said tiller being adjacent said seat.

5,081,948

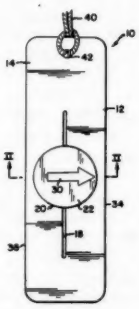
BOOKMARK

James B. Walsh, 509 Madison Ave., New York, N.Y. 10022

Filed Jun. 4, 1991, Ser. No. 710,102

Int. Cl.[5] B42D *9/00*

U.S. Cl. 116—235 **4 Claims**



1. A bookmark for indicating an exact line and page in a book, comprising

a body having a first face, a second face opposite said first face, a first edge and a second edge opposite said first edge,

indicating means mounted to said body for movement in directions generally parallel to said edges for indicating a particular page and line on said page, said indicating means having first indicia disposed adjacent said first face of said body and second indicia disposed adjacent said second face of said body, said first and second indicia pointing in opposite directions so that when said first indicia points toward said first edge of said body, said second indicia points toward said second edge of said body.

5,081,949

APPARATUS FOR SELECTIVE TINNING OF SUBSTRATE LEADS

Claude Berneur, Beaucouze, and Jean-Pierre Boiteau, Villeveque, both of France, assignors to Bull, S.A., Paris, France

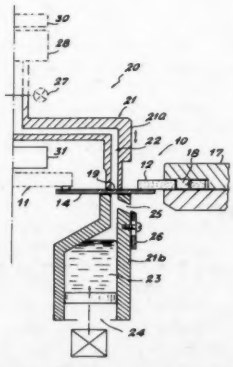
Division of Ser. No. 325,939, Mar. 20, 1989, Pat. No. 4,985,749.

This application Jan. 10, 1991, Ser. No. 639,273

Claims priority, application France, Mar. 22, 1988, 88 03674

Int. Cl.[5] B05C *3/02, 11/06*

U.S. Cl. 118—63 **10 Claims**



1. An apparatus for tinning a zone of leads disposed in overhanging fashion about a window of a substrate of a very large

scale integrated circuit, comprising vise means for clamping a plurality of leads, said vise means comprising a pair of hollow jaws, said hollow jaws forming a shaft when said jaws are disposed in a clamping position, said shaft defining a zone of said plurality of leads to be tinned, said shaft further being in communication with a source of tin; means for providing, from said source of tin, a wave of tin to said zone of said plurality of leads, wherein said zone is bathed in tin for a predetermined period of time; and means for sending a jet of gas to the tinned portion of the leads.

5,081,950

COATING DEVICE

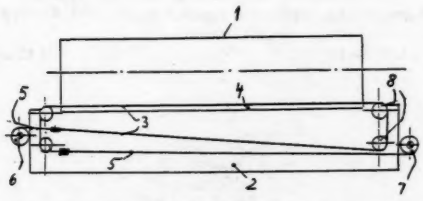
Eckhard Martin, Hunxe, and Joachim Wiesse, Wesel, both of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Jun. 8, 1990, Ser. No. 534,940

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1989, 3919087

Int. Cl.[5] B05C *11/02*

U.S. Cl. 118—70 **24 Claims**



1. A coating device for the coating of a web supported by a backing roll, comprising:

a doctor band retained in a doctor holder which is supported by a doctor beam, said doctor beam having two ends with at least one reversing roll being provided at each of said ends, said doctor band forming a loop that extends between said at least one reversing roll on one end of said beam and said at least one reversing roll on the other end of said beam, said loop having two ends and having respective winding members attached to each end wherein each winding member runs on a respective winding drum, one of said winding drums being positioned at each end of said doctor beam, said doctor band having a working area along said backing roll for coating said web, said working area of said doctor band having two longitudinal ends and being movably held in a straightline doctor guide, said doctor band further having respective excess areas that border on and extend beyond each of said longitudinal ends of said working area, said doctor band being at least partly curved in said excess areas so as to limit said doctor band to an area having a length of maximally 1.6 times greater than the length of said straightline doctor guide; and

drive means for feeding said doctor band in a longitudinal direction along said backing.

5,081,951

COATER FOR A WEB OF MATERIAL THAT TRAVELS AROUND A BACKING ROLL

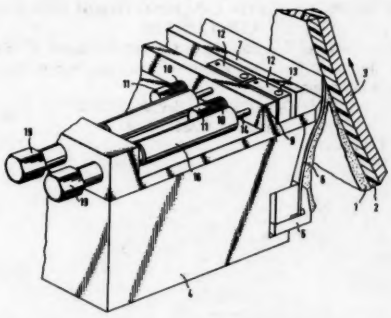
Egbert Most, Düsseldorf; Reinhard Knop, Bochum, and Runald Meyer, Willich, all of Fed. Rep. of Germany, assignors to Jagenberg Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Jun. 26, 1990, Ser. No. 543,948

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1989, 3927329

Int. Cl.[5] B05C *11/04*

U.S. Cl. 118—126 **10 Claims**



1. In a coater for a traveling web of material, including a backing roll around which the web travels, a doctor blade that presses against the backing roll, and components for adjusting the pressure distributed along the doctor blade and affecting different areas along it, the improvement wherein the adjusting components include a piezotranslator (16).

5,081,952

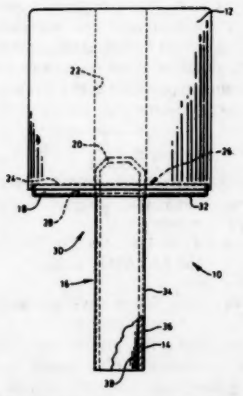
PAINT FIXTURE FOR SUPPORTING ARTICLE DURING ELECTROSTATIC SPRAYING

John A. Grassi, Princeville, and Samuel B. Stevens, Pekin, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Oct. 5, 1990, Ser. No. 593,850

Int. Cl.[5] B05C *13/00*

U.S. Cl. 118—500 **3 Claims**



1. A fixture for supporting a workpiece during spray application of a paint coating to said workpiece, said paint coating application being carried out in an electrostatic field and, subsequent to said paint coating application, paint overspray deposits on said fixture are removed by heating the fixture to a

temperature sufficient to thermally decompose the paint overspray deposits, said fixture comprising:

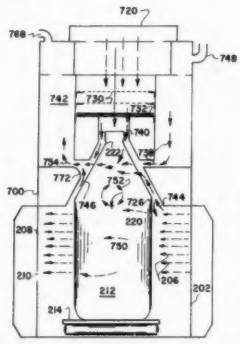
an electrically conductive metallic body having a first surface portion coverable by said workpiece during application of said paint coating to said workpiece and a second surface portion contiguous to said first surface portion, said second surface portion being covered by a vitreous enamel coating having a service temperature limit above 425° C. and a dielectric strength of at least about 18,000 v/mm.

5,081,953

CENTER SECTION FOR COATING HOOD FOR GLASS CONTAINERS

Roger T. Guthrie, Spartanburg, S.C., and Raymond W. Barkalow, Jackson, N.J., assignors to Atochem North America, Inc., Philadelphia, Pa.

Filed Oct. 27, 1989, Ser. No. 428,375
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—715 **7 Claims**



1. In an apparatus for coating of glass containers having at least a shoulder and a finish region, the apparatus comprising a coating tunnel, conveyor means, fluid-directing means and gas exhaust-removal means, wherein extraneous upwardly-directed fluid streams deposit coating precursor on the finish region of the container, the improvement which comprises a center section of the coating tunnel in combination with a horizontal gas flow and a downwardly-directed gas stream of sufficient energy to overcome the extraneous upwardly-directed fluid streams, and having exhaust means intermediate the finish and the shoulder of the ware being coated, the horizontal gas flow being so powered as to prevent displacement of the coating-precursor stream from the shoulder of the ware.

5,081,954

METHOD OF RAISING FISH

Donald T. Monus, Largo, Fla., assignor to Alfred R. Priest, Belleair, Fla., a part interest

Filed Jul. 26, 1991, Ser. No. 736,107
Int. Cl.[5] A01K *63/04*
U.S. Cl. 119—3 **10 Claims**

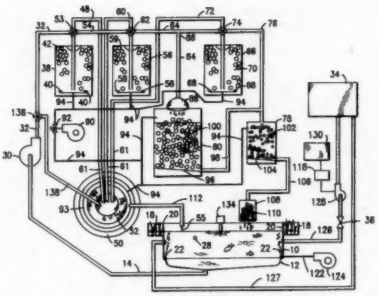
1. A method of raising fish in a self contained system comprising

pumping water from a fish growth tank through multiple filter tanks containing a filter media and bacteria and recirculating the water within the system,

continuously monitoring the oxygen content of the water with a sensor and adding oxygen to the system when the oxygen level falls below about four parts per million,

continuously monitoring the temperature of the water and adding heat to the water when the water temperature falls below the normal temperature for maintaining the fish stock,

pressurizing each filter tank with air from a blower, the blower being adapted to provide sufficient air to back wash the filter tank when solids inhibit a normal filtering step,



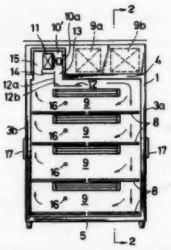
flowing the effluent from each backwash cycle to a rock sludge digestion area and recovering the water used in the backwash system for direct introduction into the fish growth tank so that water is maintained at a constant level in the tank without the need for an outside source of water except to replace water lost by evaporation.

5,081,955

ANIMAL EXPERIMENT APPARATUS

Ryozo Yoneda; Hiroyuki Ohara, both of Kato, and Shinji Ohtsuka, Ichikawa, all of Japan, assignors to Nippon Zoki Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 343,688, Apr. 27, 1989, abandoned.
This application Nov. 29, 1990, Ser. No. 619,676
Claims priority, application Japan, Apr. 30, 1988, 63-107956
Int. Cl.[5] A01K *1/03*
U.S. Cl. 119—15 **11 Claims**



1. An animal experiment apparatus comprising:

a housing;

partition shelves for vertically dividing said housing into a plurality of chambers;

means for changing temperature provided in said housing;

at least one air fan provided in an air fan chamber located in said housing;

a blowoff through which air treated by said means for changing temperature introduced into said air fan chamber is blown by said air fan;

a commutator plate extending along the inside wall of the housing to control the direction of the blown air for preventing the blown air from being blown on the shelves directly; and

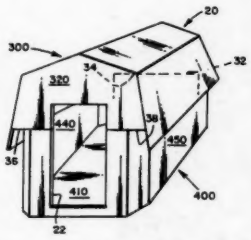
means for manually setting predetermined temperature condition timing patterns, by which at least upper and lower temperature limits and temperature condition timing patterns can be manually set.

5,081,956

DOGHOUSE WITH UNIQUE MULTI-CHANNEL FLOW-THROUGH FRESH AIR VENTILATION

Steven Greitzer, Encino, and Paul Thomas, San Pedro, both of Calif., assignors to Camden Industries, Inc., Los Angeles, Calif.

Filed Feb. 19, 1991, Ser. No. 656,696
Int. Cl.[5] A01K *1/02*
U.S. Cl. 119—19 24 Claims



1. A doghouse with multi-channel flow-through fresh air ventilation comprising:

a. a hollow top part having a roof, a front end plate, a rear end plate and two opposite side plates, where each plate has a bottom rim, and the bottom rims of the plates form a rectangular circumferential bottom rim of the top part having four straight sections and four sharp corners;

b. a hollow bottom part having a front end wall, a rear end wall, two opposite side walls, four corner walls and an octagonal floor, where each wall has a top rim, and the top rims of the walls form an octagonal circumferential top rim of the bottom part having four straight sections and four cut corners; and

c. an attaching means for detachably attaching said top part onto said bottom part to construct a doghouse, where the rectangular circumferential bottom rim of said top part is adjacent to the octagonal circumferential top rim of said bottom part, the four straight sections of the rectangular circumferential bottom rim of said top part are adjacent to the four straight sections of the octagonal circumferential top rim of said bottom part respectively, and the four sharp corners of the rectangular circumferential bottom rim of said top part are located above the four cut corners of the octagonal circumferential top rim of said bottom part respectively and thereby form four horizontal openings facing downwardly and set above the floor of said bottom part;

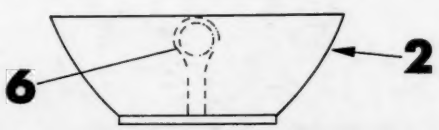
d. whereby said four horizontal openings provide multi-channel flow-through fresh air ventilation for the doghouse.

5,081,957

DELIVERING DEVICE AND AFFILIATED RECEIVING BOWL FOR FEEDING AND WATERING PETS

Louis E. Warner, Jr., 4908 Pennington La., Blue Springs, Mo. 64015

Filed Apr. 1, 1991, Ser. No. 678,020
Int. Cl.[5] A01K *7/00, 5/01*
U.S. Cl. 119—61 1 Claim



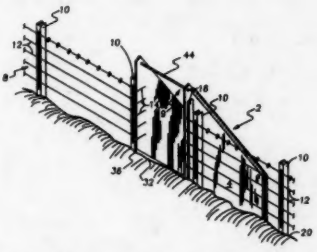
1. A system for feeding and watering animals comprising a delivering device structure in combination with an animal feed bowl, said delivering device structure having an open-top funnel with a hose attached to the bottom opening of the funnel to allow for filling of the bowl in standing or sitting position, said hose having a bent hook located on the end of the hose, opposite the end attached to the funnel, said bowl having an upstanding eye formed in the center of the bowl to allow for the hook to engage and lift or lower the bowl for easy feeding in a standing or sitting position.

5,081,958

ONE WAY ANIMAL GATE

Terry Quisenberry, 895 W. Kuiaha Rd., Haiku, Maui, Hi. 96708

Division of Ser. No. 321,695, Mar. 10, 1989, Pat. No. 4,953,323.
This application Jul. 6, 1990, Ser. No. 548,185
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—155 6 Claims



1. A method of relocating animals including the steps of:

providing an opening in a barrier fence;

sliding animals, which voluntarily enter the opening, from a first side of the barrier fence to a second side of the barrier fence; and

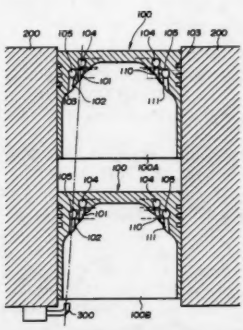
preventing the animals from returning to the first side of the barrier fence from the second side of the barrier fence.

5,081,959

COOLING ARRANGEMENT FOR PISTON HEAD OF INTERNAL COMBUSTION ENGINE

Katsuji Akiyama, Kanagawa, Japan, assignor to Atsugi Unisia Corp., Japan

Filed Dec. 27, 1990, Ser. No. 634,727
Claims priority, application Japan, Dec. 29, 1989, 1-151602[U]
Int. Cl.[5] F01P *1/04*
U.S. Cl. 123—41.35 5 Claims



1. A cooling arrangement for a piston head of an internal combustion engine, comprising:

a plurality of cooling channels formed through the piston head and extending in a circumferential direction thereof;

a plurality of induction paths and draining paths formed

through the piston head, each induction and draining path being in communication with one of said cooling channels for introducing and draining a cooling medium;

a cooling medium injection nozzle disposed within an engine cylinder for injecting cooling medium for forming flow directed to said induction paths; and wherein

said induction paths are mutually offset in such a manner that the axes thereof are oriented in alignment with the axis of the flow of the injected cooling medium at different piston stroke positions in an engine revolution cycle.

5,081,960

COOLING ARRANGEMENT FOR MULTI-VALVE ENGINE

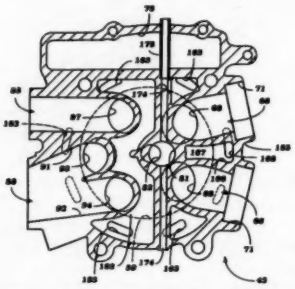
Makoto Shimamoto, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Dec. 19, 1990, Ser. No. 630,322

Claims priority, application Japan, Nov. 12, 1989, 1-321157

Int. Cl.[5] F02F *1/36*

U.S. Cl. 123—41.82 R **18 Claims**



1. A cooling jacket arrangement for a cylinder head of an internal combustion engine defining in part a combustion chamber, a pair of passages extending from valve seats in said combustion chamber to respective port openings formed in the same exterior surface of said cylinder head, a spark plug well formed in the exterior of said cylinder head and adapted to receive a spark plug for said combustion chamber, said passages and said spark plug well lying substantially on one side of said cylinder head, a cooling jacket formed by the portions of said cylinder head defining said passages and said spark plug well, and means for directing said coolant flow in a generally vertical direction through said cooling jacket, comprising a coolant inlet formed in a lower surface of said cylinder head adapted to engage an associated cylinder block and positioned between said passages, and an outlet from said cooling jacket formed vertically above said coolant inlet.

5,081,961

INTERNAL COMBUSTION ENGINE WITH ROTARY EXHAUST CONTROL

Marius A. Paul, and Ana Paul, both of 969 La Paz, Placentia, Calif. 94670

Filed Aug. 1, 1989, Ser. No. 387,897

Int. Cl.[5] F02B *25/08*

U.S. Cl. 123—51 B **16 Claims**

1. An internal combustion engine with a sequential operating cycle, the engine comprising:

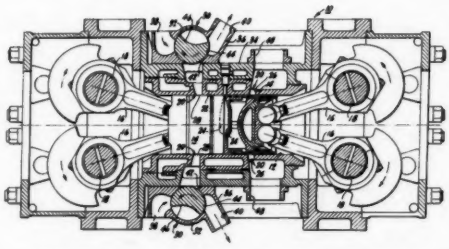
a cylinder;

a piston reciprocal in the cylinder;

at least one intake port for admitting air into the cylinder in combination with at least one exhaust/intake port for exhausting combustion gases from the cylinder and admitting additional air into the cylinder; and,

a rotary commutator valve system including:

at least one rotary commutator valve arranged in the engine proximate the exhaust/intake port, the commutator valve having an exhaust passage, an air intake passage, a common exhaust/intake passage that is connected to the exhaust/intake port, and a rotor having a bypass means for selectively and sequentially connecting the exhaust passage and the intake passage to the common exhaust/intake passage on rotation of the rotor, wherein the rotor is timed with the engine operating cycle to exhaust combustion gases through the exhaust/intake passage and the exhaust passage, scavenge remaining gases through the exhaust-



/intake passage and exhaust passage by air admitted to the cylinder through the intake port, and charge the cylinder with air through both the intake port and the exhaust/intake port by way of the intake passage and exhaust/intake passage wherein the cylinder has a cylinder wall and the intake port and the exhaust/intake port are located in the wall of the cylinder and are exposed when the piston is at the bottom dead center of reciprocation.

5,081,962

FUEL INTAKE SYSTEM FOR V-TYPE COMBUSTION ENGINE

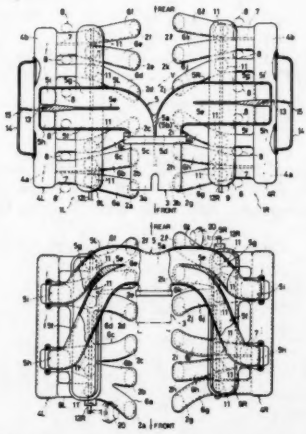
Toshikazu Kurokawa; Fusatoshi Tanaka; Kouji Matsuura, and Motoi Aoki, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 29, 1991, Ser. No. 677,566

Claims priority, application Japan, Mar. 31, 1990, 2-85810; Nov. 30, 1990, 2-334056

Int. Cl.[5] F02M *35/10*

U.S. Cl. 123—52 MV **23 Claims**



1. A fuel intake system for a combustion engine of a type having generally V-shaped first and second cylinder banks, said combustion engine having a crank axis along which a crankshaft extends, comprising:

a throttle casing disposed in a center space delimited between the first and second cylinder banks;

generally elongated first and second surge tanks extending in a direction generally parallel to the crank axis and disposed on respective sides of the center space;

a passage means communicating the throttle casing to each of the first and second surge tanks; and

said passage means comprising a merging region communicated with the throttle casing; and

first and second branch ducts branched off from one end of the merging region opposite to the throttle casing, said first and second branch ducts leading to the first and second surge tanks, respectively, each of said first and second branch ducts being comprised of two independent passages spaced apart from each other in a direction parallel to the crank axis, said two independent passages of each of the first and second branch ducts being communicated with different portions of the associated surge tank which are uniformly spaced from each other in a direction parallel to the crank axis.

5,081,963

RECIPROCATORY MACHINES

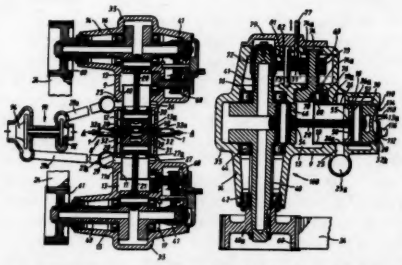
Peter A. Galbraith, West Midland, Australia, assignor to Galbraith Engineering Pty. Ltd., Australia

PCT No. PCT/AU86/00261, § 371 Date Mar. 24, 1989, § 102(e) Date Mar. 24, 1989, PCT Pub. No. WO88/01682, PCT Pub. Date Mar. 10, 1988

Continuation of Ser. No. 337,764, Mar. 28, 1989, abandoned. This PCT application Sep. 4, 1986, Ser. No. 684,155

Int. Cl.[5] F02B *75/20*

U.S. Cl. 123—59 AC **15 Claims**



1. A reciprocatory machine adaptable as a 2-stroke engine comprising means defining a working chamber, at least one piston reciprocable within the chamber, displaceable translating means associated with the piston and adapted to translate reciprocating motion of the piston into rotational movement or vice versa, intake and exhaust ports for the working chamber and respective intake and exhaust valve means for said ports distinct from said at least one piston, and means for causing said respective valve means to cyclically operate in response to said reciprocating motion of the piston, wherein at least one of the valve means comprises a sleeve valve reciprocable within said working chamber about said at least one piston and wherein said intake and exhaust ports are disposed at or adjacent to opposite ends of the working chamber respectively and means are provided for effecting independent adjustment of the timing relationship between the cyclic operation of each of the intake and exhaust valve means and the displacement of the translating means including independent adjustment of the timing of both opening and closing of each of the intake and exhaust valve means, and thereby to adjust the timing relationship between the cyclic operation of the respective valve means.

5,081,964

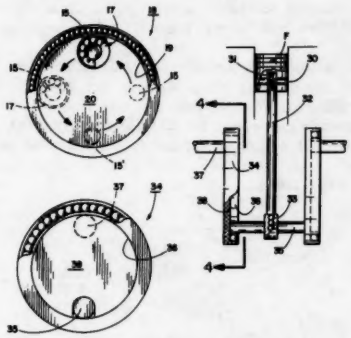
CRANKLESS INTERNAL COMBUSTION ENGINE

Will M. Lassiter, 1703 Deep River Rd., High Point, N.C. 27260

Continuation of Ser. No. 544,846, Jun. 27, 1990, Pat. No. 5,040,502. This application Jul. 29, 1991, Ser. No. 736,778

Int. Cl.[5] F02B *75/32*

U.S. Cl. 123—197.4 **15 Claims**



1. In an internal combustion engine of the type employing a reciprocating piston with a piston rod for imparting rotary motion to a power take-off, the improvement comprising: a plurality of pistons, a plurality of piston rods, each of said piston rods joined to one of said pistons, a plurality of crank bearings, each of said crank bearings comprising a rotatable inner race, a plurality of connecting members, each piston rod joined to a different connecting member, each end of each of said connecting members joined to a different crank bearing with at least one end of said connecting members fixed to respective said rotatable inner race whereby reciprocating said pistons causes said connecting members to rotate, thereby turning said power take-off.

5,081,965

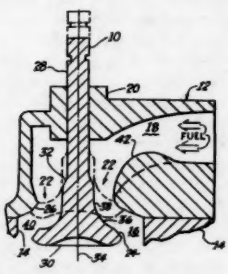
INTAKE VALVE FOR INTERNAL COMBUSTION ENGINE

Craig E. Walters, Spokane, Wash.; Victoria H. Bravender, Boca Raton, and Carl J. Shuhi, Boynton Beach, both of Fla., assignors to Warr Valves, Inc., Boca Raton, Fla.

Filed Aug. 15, 1990, Ser. No. 568,249

Int. Cl.[5] F01L *3/20*

U.S. Cl. 123—188 AA **15 Claims**



9. An internal combustion engine comprising:

an engine block having an opening therein;

a passageway connected to said opening;

means for mixing fuel and air and for causing said mixture to flow through said passageway; and

an intake valve positioned through said passageway, said valve being movable between first and second positions to respectively open and close said opening, said valve in-

cluding a stem, a head and a blend region between said stem and head, said blend region being radially irregular and positioned in said passageway and non-coaxial with said stem and head.

5,081,966

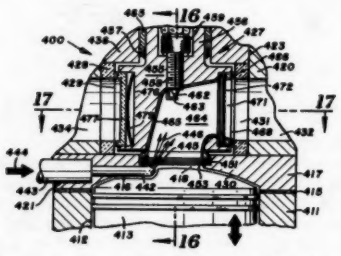
INTERNAL COMBUSTION ENGINE WITH ROTARY VALVE ASSEMBLY

Craig N. Hansen, Minnetonka, and Paul C. Cross, Minneapolis, both of Minn., assignors to Hansen Engine Corporation, Minnetonka, Minn.

Continuation-in-part of Ser. No. 248,946, Sep. 23, 1988, Pat. No. 5,000,136, and a continuation-in-part of Ser. No. 899,157, Aug. 22, 1986, Pat. No. 4,773,364, said Ser. No. 899,157, is a continuation-in-part of Ser. No. 671,573, Nov. 15, 1984, Pat. No. 4,612,886. This application Mar. 8, 1991, Ser. No. 666,851

Int. Cl.[5] F01L *7/10*

U.S. Cl. 123—190 B **34 Claims**



1. An internal combustion engine comprising: a block having at least one cylindrical wall surrounding a cylinder, piston means located in said cylinder, means operable to reciprocate the piston means in said cylinder, head means mounted on the block covering said cylinder, said head means having an intake passage for intake gas, an exhaust gas passage for exhaust gas, and a cavity with an inner surface open to the cylinder, and open to said passages, a rotary valve assembly having a valve body located within said cavity, the valve body having a valving combustion chamber and an outer surface spaced from the inner surface of the cavity to enable the valve body to rotate and thereby control the flow of intake gas from said intake passage into said valving combustion chamber of the rotary valve assembly and the cylinder and the flow of exhaust gas out of the valving combustion chamber of the rotary valve assembly and the cylinder to said exhaust gas passage, such flow occuring via said valving comustion chamber in the valve body open to the cylinder and said inner surface of the cavity, first seal means mounted on the valve body having a hole in alignment with an outer portion of the valving combustion chamber and the inlet and outlet passages, said first seal means having a surface surrounding the hole located in sliding sealing engagement with an arcuate section of the inner surface of the cavity, means connecting the first seal means to the valve body whereby the first seal means rotates with the valve body, second seal means between the first seal means and the body allowing limited movement of the first seal means relative to the body to maintain the sealing relationship between the surface of the first seal means that engages the inner surface of the cavity and block the flow of the intake gas, and exhaust gas into the space between the outer surface of the valve body, third seal means cooperating with said valve body and head means to block the flow of the intake gas, and exhaust gas into the space between the valve body and inner surface of the cavity, means for introducing combustible fuel into the combustion chamber, and means operable to rotate the rotatable valve body and first seal means in timed relation with the movement of the piston means whereby said engine has intake, compression, power, and exhaust strokes.

5,081,967

PISTON WITH SEPARATE HEAD AND SKIRT

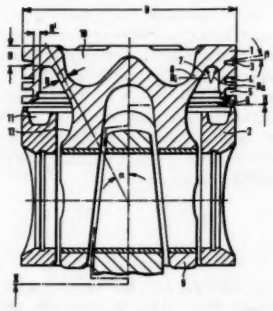
Peter Kemnitz, Kernen, and Emil Ripberger, Remseck, both of Fed. Rep. of Germany, assignors to Mahle GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 1, 1991, Ser. No. 694,415

Claims priority, application Fed. Rep. of Germany, May 8, 1990, 4014705

Int. Cl.[5] F02F *3/22, 3/26*

U.S. Cl. 123—193 P **12 Claims**



1. In an improved piston for an internal combustion engine with a separate head and skirt which are joined by a piston pin, rings, a ring belt in which ring grooves, each having an upper and lower side, are set, extends downward from the head and terminates above the pin, the ring belt defines an outer border of a cooling oil ring space, a section of the head extending from the piston base defines the inner border of the space, the section is located over two hubs which form a mount for the pin, a bottom free end of the ring belt is detached from the head, a depression is formed in the head and is partly defined by the head section, the improvement comprising:

the head section having a thickness in the range of four to seven percent of the piston diameter, the thickness of 4% corresponding to an angle 0° of the head section with respect to a vertical longitudinally extending line passing through the center of the piston, the thickness of 7% corresponding to an angle 60° of the head section, the thicker increasing from 4% to 7% as the angle increases from 0° to 6°.

the top of the ring space defining a plane which is parallel to the top of the head, the distance between the plane and the top of the head being in the range of 6–12 percent of the piston diameter, the plane being positioned below the lower side of the uppermost ring groove; and

wherein the ring belt has a thickness greater than two and a half percent of the piston diameter in an area above the lower side of the second ring groove from the top of the head.

5,081,968

PISTONS FOR AN INTERNAL COMBUSTION ENGINE

Ludovico Bruni, Turin, Italy, assignor to Borgo Nova SpA, Turin, Italy

Filed Jul. 23, 1991, Ser. No. 734,469

Claims priority, application Italy, Jul. 31, 1990, 67613 A/90

Int. Cl.[5] F02F *3/00*

U.S. Cl. 123—193 P **10 Claims**

1. A piston for an internal combustion engine includes a lower crown portion and an upper crown portion, the upper crown portion including a combustion bowl and a piston ring-groove belt of generally annular form depending from the outer periphery of the crown surface, the lower crown portion comprises a generally circular plate member having an upstanding ring on the upper surface thereof, the upper crown portion and the lower crown portion are joined together by

retention means between the combustion bowl and the upstanding ring, and between co-operating spigot and socket means formed on the base of the combustion bowl and on the

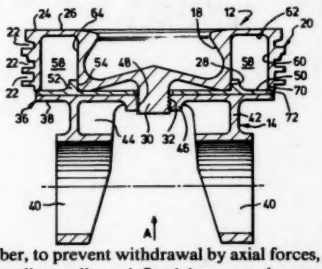


plate member, to prevent withdrawal by axial forces, and there is an oil cooling gallery defined between the upper crown portion and the lower crown portion.

5,081,969

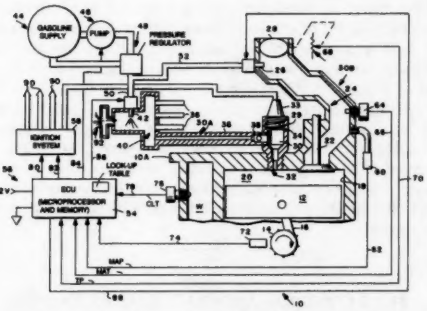
IGNITION COMBUSTION PRE-CHAMBER FOR INTERNAL COMBUSTION ENGINES WITH CONSTANT STOICHIOMETRIC AIR-FUEL MIXTURE AT IGNITION

Alexander Long, III, Oakton, Va., assignor to Electromotive, Inc., Chantilly, Va.

Filed Feb. 14, 1990, Ser. No. 480,170

Int. Cl.[5] F02B *19/10*

U.S. Cl. 123—274 **2 Claims**



1. An internal combustion engine including at least one combustion chamber and a pre-chamber in fluid communication with said combustion chamber, a method of providing combustion within said combustion chamber comprising the following steps:

(a) charging said combustion chamber with a first mixture of air and fuel having a lean ratio of air-to-fuel;

(b) charging said pre-chamber with a further mixture of air and fuel, said further mixture having a ratio of air-to-fuel that is compensated by an amount responsive to the leanness of the mixture used to charge said combustion chamber, the volume of the prechamber, the volume of the main chamber, and the compression ratio of the engine;

(c) mixing, within said pre-chamber, a portion of said combustion chamber mixture with said pre-chamber mixture to provide a still further mixture having an air-to-fuel ratio that is optimally ignitable while the mixture within said combustion chamber continues to have substantially said lean ratio of air-to-fuel;

(d) igniting the still further mixture within said pre-chamber to create a flame front; and

(e) propagating said flame front into the combustion chamber to ignite the air and fuel mixture within said combustion chamber,

wherein said step (b) is performed over at least a large portion of the operation range of the engine.

5,081,970

HEAT-INSULATING ENGINE WITH SWIRL CHAMBER

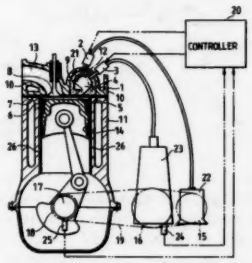
Hiroshi Matsuoka, Yamato, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Oct. 1, 1990, Ser. No. 591,168

Claims priority, application Japan, Sep. 29, 1989, 1-252272

Int. Cl.[5] F02M *45/06*; F02B *19/14*

U.S. Cl. 123—275 **13 Claims**



1. A heat-insulating engine with swirl chamber which includes a cylinder block having cylinders, a cylinder head fitted to said cylinder block, pistons reciprocating inside said cylinders, swirl chamber blocks of a heat-insulating structure disposed in said cylinder head and swirl chambers formed in said swirl chamber blocks, and which is operated sequentially in four-stroke cycle of an intake stroke, a compression stroke, an expansion stroke and an exhaust stroke comprising:

subsidiary nozzles having injection ports thereof opened to said swirl chambers and injecting a subsidiary fuel amount along the wall surface of said swirl chamber blocks from the second half of said intake stroke to said compression stroke;

a fuel pressurization pump for supplying a low pressure fuel to said subsidiary nozzles;

main nozzles having injection ports thereof opened to said swirl chambers and injecting a main fuel amount into said swirl chambers from the second half of said compression stroke to the first half of said expansion stroke following the fuel injection by said subsidiary nozzles; and

a fuel injection pump for supplying the fuel to said main nozzles.

5,081,971

INTAKE SYSTEM FOR INTERNAL COMBUSTION ENGINE

Kazuo Inoue; Yoshio Ajiki, and Hiroshi Sono, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1990, Ser. No. 505,930

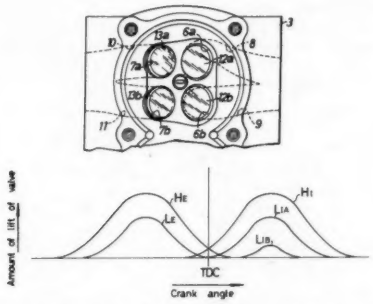
Claims priority, application Japan, Apr. 7, 1989, 1-89252; Apr. 7, 1989, 1-89254

Int. Cl.[5] F02B *31/00*

U.S. Cl. 123—308 **10 Claims**

1. An intake system for an internal combustion engine, comprising first and second intake valve openings provided in a body of the engine so as to be exposed to a combustion chamber, first and second intake valves capable of opening and closing said first and second intake valve openings, respectively, and a valve operating device for said first and second intake valves including a plurality of cams and members associated with said cams, respectively, for causing opening and closing of the first and second intake valves, said members being capable of being mutually connected and disconnected, wherein said engine body is provided with a spiral-shaped swirl producing intake port leading to the first intake valve

opening and a substantially linear intake port leading to the second intake valve opening, and wherein said valve operating device is capable of changing over a state of operation of the first and second intake valves between a first state in which the first intake valve is operated in a first mode corresponding to a



low speed operation of the engine and the second intake valve is in a resting or a substantially resting condition, and a second state in which the first and second intake valves each are operated in a second mode corresponding to a high speed operation of the engine different than said first mode.

5,081,972

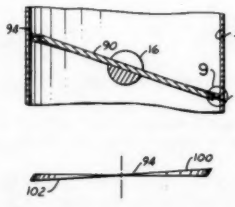
ENGINE THROTTLE BLADE SEALING

Paul D. Daly, Troy, and Robert A. McArthur, Drayton Plains, both of Mich., assignors to Siemens Automotive L.P., Auburn Hills, Mich.

Division of Ser. No. 481,076, Feb. 16, 1990, Pat. No. 5,035,214. This application Jun. 25, 1991, Ser. No. 720,972

Int. Cl.[5] F02M *7/00*; F16K *1/226*

U.S. Cl. 123—337 **11 Claims**



1. A throttle body assembly for selectively throttling the flow of combustion air into an internal combustion engine and comprising a throttle body having a throughbore, a blade disposed in said throughbore, a shaft supporting said blade on said body for rotary positioning about an axis that is transverse to said throughbore, and means for rotating said shaft, characterized by the improvement wherein said blade comprises a circular lip consisting of two mutually exclusive substantially semi-circular segments, each of said two segments extending from a corresponding circumferentially co-extensive portion of said blade in the same direction as that in which the segment approaches the wall of said throughbore when said blade is being positioned in the direction of increasingly throttling flow through said throughbore.

5,081,973

IDLING SPEED CONTROL SYSTEM FOR ENGINE

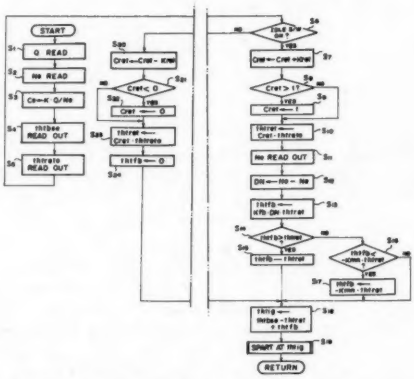
Kunitomo Minamitani, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Nov. 29, 1990, Ser. No. 647,475

Claims priority, application Japan, Nov. 30, 1989, 1-312415

Int. Cl.[5] F02M *3/00*

U.S. Cl. 123—339 **8 Claims**



1. An idling speed control system for an engine comprising an idle detecting means which detects that the engine idles, an ignition timing changing means which changes ignition timing of the engine, an intake air amount control means which controls the amount of intake air during idling according to external load acting on the engine, and a control means which feedback-controls the ignition timing changing means by the use of a predetermined control variable so that the engine speed during idling converges on a target idling speed, wherein the improvement comprises an intake air charging amount detecting means which detects the amount of intake air charged to the engine and a control variable changing means which changes said predetermined control variable of the control means according to the amount of intake air charged to the engine.

5,081,974

FUEL CONTROL APPARATUS OF AN ENGINE

Takeshi Chikamori, Yamaguchi; Masaki Ohkubo, Hiroshima; Akira Kamisakamoto, Hiroshima; Shoji Imai, Hiroshima; Shunichi Tsubota, Hiroshima; Hideyuki Uemura, Hiroshima, and Shinichi Wakutani, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 23, 1991, Ser. No. 644,576

Claims priority, application Japan, Jan. 25, 1990, 2-15831

Int. Cl.[5] F02D *41/04*

U.S. Cl. 123—478 **12 Claims**

1. A fuel control apparatus of an engine comprising:

fuel supply means for supplying fuel to the engine, said fuel supply means including a fuel injector,

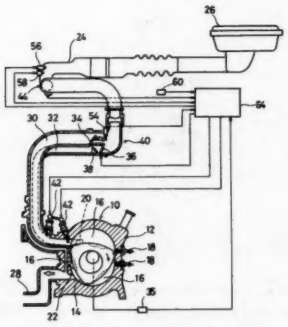
intake pressure detecting means for detecting an intake pressure of an intake passageway through which intake air is fed into the engine,

fuel control means for controlling the fuel supply means so that an amount of the fuel supplied to the engine corresponds to the intake pressure on the basis of a signal outputted from the intake pressure detecting means,

intake resistance changing means for changing a resistance of the intake air flowing through the intake passageway correspondingly to the operating condition of the engine, and

correction means for correcting a supply amount of the fuel to be controlled by the fuel control means when the resis-

tance of the intake air flowing through the intake passageway is changed by the intake resistance changing means, wherein the correction means makes the fuel control means add a correction injection pulse, which is obtained by multiplying a basic injection pulse width by a correction



factor, to a basic injection pulse width of the fuel injector in order to increase an amount of the fuel supplied from the fuel injector,

and wherein the correction factor is set so as to be increased when an absolute value of the intake pressure of the intake passageway is increased.

5,081,975

IDLE STABILIZING SYSTEM FOR ENGINE

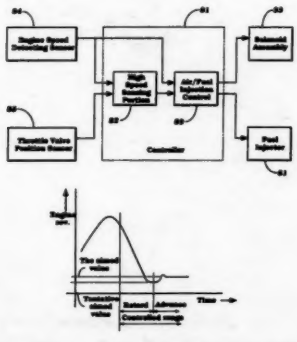
Kosei Maebashi, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Dec. 21, 1990, Ser. No. 633,083

Claims priority, application Japan, Dec. 27, 1989, 1-343767; Jun. 12, 1990, 2-153124

Int. Cl.[5] F02M *51/00, 41/12*

U.S. Cl. 123—493 **10 Claims**



1. A fuel injection system for an internal combustion engine comprising a fuel injector for injecting fuel to the engine, control means for controlling the operation of said fuel injector to determine the speed at which said engine runs, means for sensing engine speed, means for sensing throttle opening position, means for determining when the engine has been operating at a high speed condition and the throttle has been rapidly closed, and means for operating said control means to cause said fuel injector to have said engine operate at a speed lower than normal idle speed in response to a rapid closure of the throttle valve from a high speed condition.

5,081,976

BUCKET TAPPET FOR AN INTERNAL COMBUSTION ENGINE WITH OVERHEAD CAMSHAFT

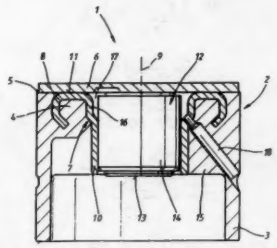
Rolf-Wolfram Dahm, Nürtingen; Hermann Vollmer, Stuttgart, and Erwin Wolf, Weissach, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Jun. 18, 1990, Ser. No. 539,210

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1989, 3919777

Int. Cl.[5] F01L *1/14, 1/24*

U.S. Cl. 123—90.48 **12 Claims**



1. A bucket tappet for an internal combustion engine with overhead camshaft, comprising a hollow, aluminum material cylindrical tappet shank with an annular bead directed radially inwardly at an end of the tappet shank, a baseplate supported outwardly of the annular bead and made of a material selected from a steel material and a hard metal material, a concentrically arranged guide bush inside the tappet shank for accommodating a play-compensating element, and supported against a wall of the shank by radial ribs, and a steel material carrier to which the baseplate is secured is embedded in the tappet shank.

5,081,977

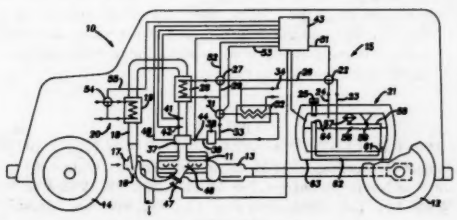
LOW POLLUTION NATURAL GAS VEHICLE

Paul F. Swenson, Shaker Heights, Ohio, assignor to Consolidated Natural Gas Service Company, Inc., Pittsburgh, Pa.

Filed Feb. 13, 1990, Ser. No. 479,335

Int. Cl.[5] F02B *43/00*

U.S. Cl. 123—527 **7 Claims**



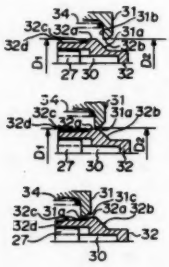
1. A method of operating an internal combustion engine comprising the steps of supplying liquid natural gas as a fuel for the engine and using the heat of vaporization of the liquid natural gas to cool the charge air supplied to the engine whereby NO_x emissions from the engine are reduced, the charge air being precompressed and then cooled by the liquid natural gas before it enters the engine, said precompressed charge air being passed through a first intercooler and then being cooled in a second intercooler cooled by the liquid natural gas.

5,081,978

AUXILIARY AIR CONTROL VALVE FOR ENGINES

Mamoru Sumida, and Osamu Matsumoto, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1990, Ser. No. 627,805
Claims priority, application Japan, Dec. 18, 1989, 1-329327
Int. Cl.[5] F02D *9/00, 41/00*
U.S. Cl. 123—588 **10 Claims**



1. An auxiliary air control valve for engines comprising:

a valve casing having an air inlet port and an air outlet port, the ports being connected to a bypass passage for a throttle valve in an intake passage to an engine;

a temperature dependent type actuator which is housed in the valve casing, which cooling water to the engine is partly branched to be introduced to, and which is depending on the temperature of the cooling water;

a valve seat which is arranged in the valve casing to divide its inside into an air inlet side and an air outlet side, and which has a valve seat port formed therein;

an operating rod which is supported by the actuator so as to be axially movable, and which can be moved forwardly under temperature dependent operation of the actuator;

a valve which is supported and can be moved forwardly by the operating rod, and which can have a forward end peripheral portion confronted with the valve port; and

means which is arranged between a rear end of the valve and the valve seat to urge the valve backwardly;

wherein the valve has an intermediate peripheral portion enlarged to present a small gap to the valve seat port, and the front side of the intermediate peripheral portion and the rear side thereof formed to have slant surfaces so as to be diametrically and gradually reduced so that when the cooling water is at a low temperature, the front slant surface is positioned at the valve seat port, when the cooling water is at an intermediate temperature, the intermediate peripheral portion is positioned at the valve seat port, and when the cooling water is at a high temperature, the rear slant surface is positioned at the valve seat port, thereby being capable of controlling the quantity of intake air through the bypass passage.

5,081,979

FRONT PULL GRIP ASSEMBLY FOR ARCHERY BOW

Michael R. Burling, 7611 Holstein Rd., Toledo, Ohio 43617

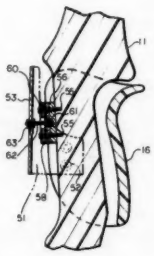
Continuation-in-part of Ser. No. 182,442, Apr. 18, 1988, Pat. No. 4,966,124. This application Jun. 15, 1990, Ser. No. 538,663
Int. Cl.[5] F41B *5/00*
U.S. Cl. 124—23.1 **14 Claims**

1. In an archery bow having a central riser element and upper and lower limbs extending therefrom in the plane of the bow, the combination therewith of:

a grip assembly comprising a hand grip having a back surface nearest the archer and at the back side of the riser element, the hand grip having depending sides spaced on either side of the riser element, a U-shaped back plate element secured to said hand grip and extending across the front of the riser element, said back plate element and said hand grip together substantially encircling the riser element,

a low friction pivotal connection means between said back plate element and said riser element comprising

a pin member fastened to one of said elements, and a pivot member on the other of said elements, said pin member



engaging said pivot member for pivotal movement without imparting torque from the hand grip to the riser element;

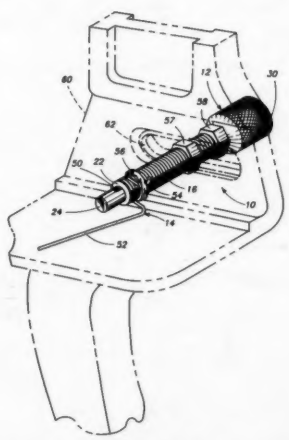
wherein said pivot member is on the forward side of the riser element facing away from the archer and the pin member is fastened to the back plate element.

5,081,980

PLUNGER ARROW REST

George T. Newbold, Walla Walla, Wash., assignor to Martin Archery, Inc., Walla Walla, Wash.

Filed Oct. 10, 1990, Ser. No. 595,391
Int. Cl.[5] F41B *5/22*
U.S. Cl. 124—44.5 **19 Claims**



1. An arrow rest apparatus for attachment to an archery bow to support an arrow before and during release from the bow, the arrow rest apparatus comprising:

a cushion plunger assembly having an elongated and projecting plunger, the cushion plunger assembly being mountable to an archery bow to engage a side of an arrow with the plunger, the plunger being outwardly biased to an extended positon and being depressible to a depressed position within the assembly against the bias to absorb side pressure exerted by an arrow in the direction of the bow upon shooting;

at least one longitudinally elongated aperture extending through the plunger;

a wire extending through the aperture, the wire being sized and mounted to be pivotal within the aperture and mounted to remain laterally stationary relative to the cushion plunger assembly as the plunger is moved between the extended and depressed positions, the wire extending outwardly from the cushion plunger assembly at an elevation that is generally below the plunger to support an arrow; and

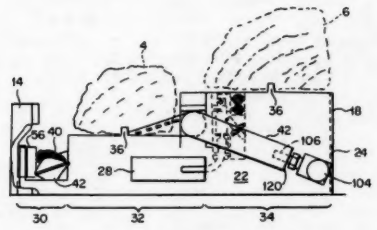
biasing means engaging the wire and the cushion plunger assembly for elastically biasing the wire to a resting pivotal position.

5,081,981

YELLOW FLAME GAS FIREPLACE BURNER ASSEMBLY

Thomas J. Beal, Ossian, Ind., assignor to Majco Building Specialties, L.P., Huntington, Ind.

Filed Jul. 9, 1990, Ser. No. 550,116
Int. Cl.[5] F24C *3/04*
U.S. Cl. 126—92 R **10 Claims**



1. A gas fireplace burner assembly, which comprises:

a log grate for supporting a plurality of artificial logs, the log grate being formed with a stepped configuration and having a back wall and opposite side walls joined to the back wall, each of the back wall and opposite side walls having an opening formed through the thickness thereof, the openings being dimensioned to allow secondary air to pass therethrough and into an interior space defined by the back wall and opposite side walls, the log grate further including a grate front member situated opposite the back wall;

at least a front and rear artificial log mounted on the log grate and supported thereby, the front and rear logs being arranged generally in parallel with each other;

a burner tube, the burner tube including interconnected front and rear portions disposed in a spaced apart, parallel arrangement, the rear portion being disposed at least partially below and between the front and rear logs, and the front portion being disposed at least partially below and between the grate front member and the front log;

a front flame deflector, the front flame deflector including an elongated plate-like member interposed between and spaced apart from the grate front member and the front portion of the burner tube, the front flame deflector and the grate front member, and the front flame deflector and the front burner tube portion defining first and second channels, respectively, for secondary air to flow through; and

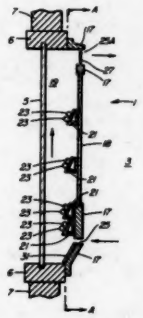
gas control means for controlling the passage of gas through the burner tube, the gas control means including a gas valve communicating with the burner tube and adapted to be coupled to a source of gas.

5,081,982

SOLAR WINDOW AIR HEATER

John A. MacKenzie, 812 Baseline Road, Ottawa, Ontario, Canada K2C 0A3

Filed Dec. 21, 1990, Ser. No. 631,869
Claims priority, application Canada, Jan. 2, 1990, 2006971
Int. Cl.[5] E04D *13/18*
U.S. Cl. 126—429 **12 Claims**



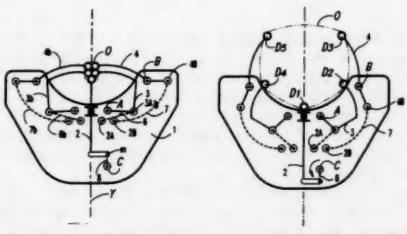
1. A solar collector comprising a collector frame surrounding a transparent collector pane, the collector frame being mounted to the frame of an existing window inside a building, a plurality of narrow heat sinks fixed to opposite sides of the collector frame containing solar energy absorbing and retaining means, the heat sinks being spaced so as to allow significant amounts of solar illumination incident on the existing window to pass through the collector pane into the building, a lower port passing through the solar collector and located adjacent the bottom of the collector and an upper port passing through the solar collector adjacent the top of the collector, whereby air from the building can pass through the lower port into a space between the existing window and the collector pane, and out the upper port into the building, thereby heating the interior of the building.

5,081,983

MEDICAL RETRACTOR DEVICE

Josue J. Villalta, 11923 Discovery Cir., Indianapolis, Ind. 46236, and Jean R. Passemard, 8 Rue Dela Tour Aux Saints, Crecy la Chapelle, 77580, France

Filed Feb. 20, 1990, Ser. No. 481,282
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 **11 Claims**



1. A retractor for holding open an opening in the human body comprising:

a main frame having a forward end with a recess formed therein;

a plurality of levers pivotally mounted to said main frame and having distal ends;

a pair of upper fingers mounted to a pair of said distal ends and extending perpendicularly outwardly from said main frame;

a pair of middle fingers mounted to a second pair of said

distal ends and extending perpendicularly outwardly from said main frame;

a slide movably mounted to said main frame and having an outer end, said slide movable along a straight line;

a lower finger mounted to said outer end and extending perpendicularly outwardly from said main frame; and,

a control means movably mounted to said main frame and connected to said levers and slide, said control means having a first position moving said levers and slide to locate said upper fingers, said middle fingers and said lower finger in a closed position ready for insertion into said opening in the human body and further having a second position moving said levers and slide to pivotally move and locate said upper fingers and said middle fingers and to linearly move and locate said lower finger in an open position spreading and holding human tissue apart surrounding said opening.

5,081,984

POSITIONING A PATIENT FOR LITHOTRIPSY

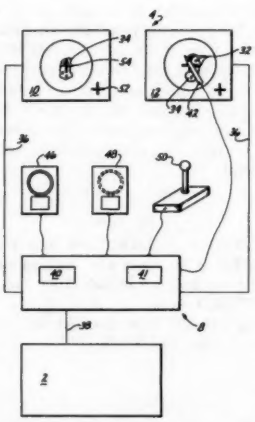
Othmar Wess; Pavel Novak, both of Munich; Klaus Mechnich, Wessling, and Reiner Schultheiss, Eching, all of Fed. Rep. of Germany, assignors to Dornier Medizin Technick GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 124,120, Nov. 16, 1987, abandoned. This application Mar. 13, 1990, Ser. No. 492,687

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1986, 3638953

Int. Cl.[5] A61B *17/22*

U.S. Cl. 128—24 EL **10 Claims**



1. A lithotripter including equipment for the contacless noninvasive comminution of concrements, further including an apparatus for positioning the body of a human being and patient in relation to the equipment for noninvasived comminution of concrements such that a focal point of that equipment is made to coincide with a concrement in that patient, the apparatus including a rest on which the patient is placed, the improvement comprising:

first means for moving said rest with the patient on it in a longitudinal direction being also a longitudinal direction and axis with regard to said patient as so positioned and his/her orientation on the rest;

second means for moving said rest laterally in relation to movement of the first means corresponding to a movement to the left and to the right as far as said orientation of the patient is concerned;

third means for moving said rest in a direction transverse to said longitudinal and lateral directions of movement;

fourth means for tilting the rest about the longitudinal axis;

a water cushion filled with water and adapted for interpositioning between said equipment for comminution and said patient, there being means for controlling the level of the water in said cushion;

a plurality of locating devices, said devices being oriented in directions that are different from each other, for locating a concrement in the patient;

display means connected to the locating devices for visibly indicating the respectively located concrement and separately as to each of the locating devices;

first control means coupled to said locating devices and including means for cooperation with the display means for establishing, in relation to the display on the display means signals, representing coordinate positions for the concrement as visible in the display means and separately for the display produced by each locating devices;

second control means connected to the first control means and to said first, second and third means and operating in response to the signals for homing in said rest in relation to the comminution equipment such that its focal point coincides with the concrement as detected by said locating means, and as identified by the first control on the display means; and

means for operating the comminution equipment for the comminution of the detected concrement.

5,081,985

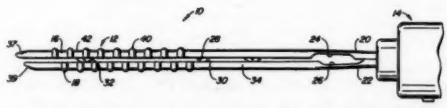
VIBRATORY METHOD AND DEVICE FOR TREATING FEMALE VOIDING DYSFUNCTIONS

German Borodulin; Maxim Persidsky, both of San Francisco, and Alexander Shkolnik, San Mateo, all of Calif., assignors to Urological Instruments Research, Inc., San Francisco, Calif.

Filed Feb. 9, 1990, Ser. No. 478,299

Int. Cl.[5] A61H *1/00*

U.S. Cl. 128—32 **13 Claims**



9. A device for treating female voiding dysfunctions by inserting it into a female urethra and simultaneously applying cyclic radially and axially directed forces comprising:

an actuator having an output member capable of performing axial reciprocating movements;

a probe having an outer surface, the probe comprising a plurality of rods, each of said rods having a longitudinal axis, a first end and a second end, said first end being coupled to said output member of said actuator;

means for creating a cyclic radially outwardly directed force at the probe's outer surface in response to cyclic movement of said rods by said output member;

means for creating a cyclic axially directed force at the probe's outer surface in response to cyclic movement of said rods by said actuator, said means for creating said axially directed force comprising serrations formed on said outer surface of said rods; and

means for introducing flushing liquid to the probe's outer surface.

5,081,986

MASSAGING AND COMBING HELMET FOR INSOMNIA

Nam J. Cho, 5 Wayside La., Ashland, Mass. 01721

Filed Sep. 7, 1990, Ser. No. 578,802

Int. Cl.[5] A61H *7/00*

U.S. Cl. 128—62 R **11 Claims**

1. A massaging helmet comprising;

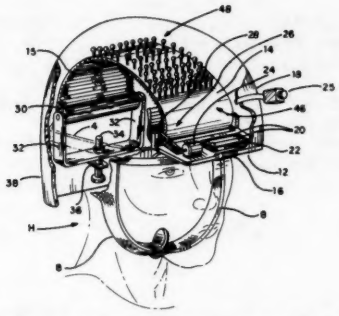
a shell having a forward edge adapted to be worn adjacent a user's forehead and a rear edge adapted to be worn

adjacent the rear of a user's head juxtaposed the back of the user's neck,

retention means for fastening said shell to the head of a user,

front and rear rollers mounted within said shell and having their axes of rotation normal to the plane of symmetry of the head of the user, said front roller disposed adjacent said shell forward edge and said rear roller disposed adjacent said shell rear edge,

an endless unitary belt having an inner surface sheaved about and spanning said front and rear rollers, an outer surface on said endless belt engageable with the scalp of a user,



adjustment means connected to at least one said roller and operable to vary the distance between said front and rear rollers to alter the configuration of said belt spanning said rollers, and

a motor connected to one of said rollers, whereby

upon operation of said motor said at least one roller is driven and said belt is moved between said rollers with said belt outer surface being moved over and massaging the scalp of the user.

5,081,987

IMPLANTABLE MEDICAL DEVICE FOR STIMULATING A PHYSIOLOGICAL EVENT OF A LIVING BEING WITH STIMULATION INTENSITY ADAPTABLE TO PHYSICAL ACTIVITY OF THE LIVING BEING

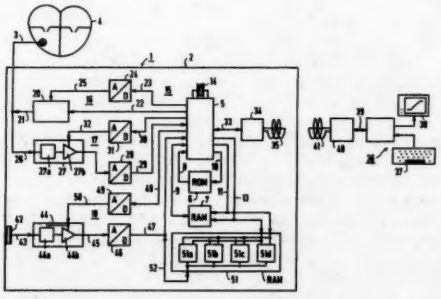
Indra Nigam, Sundbyberg, Sweden, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 13, 1990, Ser. No. 492,828

Claims priority, application European Pat. Off., Mar. 13, 1989, 89104401.8

Int. Cl.[5] A61N *1/362*

U.S. Cl. 120—419 PG **9 Claims**



1. A device that is implantable into a body of a living being, comprising:

means for stimulating a physiological event of said living being with a variable stimulation intensity;

adjustment means operatively coupled to said means for stimulating for adapting the stimulation intensity to physical activity of said living being;

sensor means operatively coupled to said adjustment means for generating a signal corresponding to physical activity of said living being, said adjustment means adapting the stimulation intensity in view of said signal generated by said sensor means;

memory means for storing digital data which is selectively operable between read and write modes;

means for entering in said memory means said digital data corresponding to a chronological curve of said signal generated by said sensor means over a time span; and

means for recalling said digital data stored in said memory means and telemetrically transmitting said data to an external data processing means.

5,081,988

EXERCISE RESPONIVE CARDIAC PACEMAKER

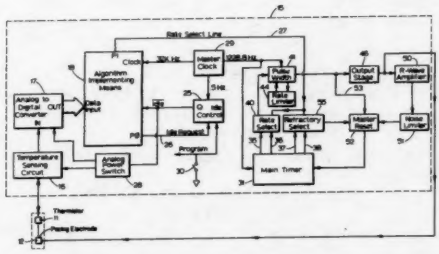
William A. Cook, Bloomington; Neal E. Fearnot, and Leslie A. Geddes, both of West Lafayette, all of Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Continuation of Ser. No. 158,402, Feb. 22, 1988, Pat. No. 4,995,390, which is a continuation of Ser. No. 915,887, Oct. 2, 1986, Pat. No. 4,726,383, which is a continuation of Ser. No. 781,945, Sep. 30, 1985, abandoned, which is a continuation of Ser. No. 542,590, Oct. 17, 1983, Pat. No. 4,543,954, which is a continuation-in-part of Ser. No. 379,667, May 19, 1983, Pat. No. 4,436,092. This application Feb. 26, 1991, Ser. No. 661,402

The portion of the term of this patent subsequent to Oct. 1, 2002, has been disclaimed.

Int. Cl.[5] A61N *1/365*

U.S. Cl. 128—419.0 PG **44 Claims**



1. A cardiac pacemaker including means for variably controlling the stimulation rate of the heart according to the level of muscular exertion in the body, comprising:

sensor means for sensing a body temperature;

stimulus means for applying an electrical stimulus to a heart;

control circuit means for calculating the rate of change of said sensed body temperature, said control circuit means including means for generating a rate control signal according to a predetermined algorithm relating heart rate to rate of change of temperature; and

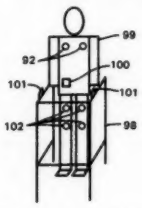
means responsive to said rate control signal for variably controlling the stimulation rate of the heart.

5,081,989

MICROPROCESSOR-CONTROLLED ENHANCED MULTIPLEXED FUNCTIONAL ELECTRICAL STIMULATOR FOR SURFACE STIMULATION IN PARALYZED PATIENTS

Daniel Graupe, Highland Park; Amihadar Arber, Skokie, and Silvano A. Romeo, Franklin Park, all of Ill., assignors to Sigmedics, Inc., Northfield, Ill.

Continuation-in-part of Ser. No. 335,197, Apr. 7, 1989, Pat. No. 5,014,705. This application Apr. 26, 1990, Ser. No. 515,163
The portion of the term of this patent subsequent to May 14, 2008, has been disclaimed.
Int. Cl.[5] A61N *1/00*
U.S. Cl. 128—419 R **22 Claims**



1. An electrical stimulation system adapted for coupling to a patient, said system comprising:

a plurality of electrodes adapted for coupling to locations at the right and left side of a lower part of the body of a patient,

pulse generator means for selectively providing pulse generator means outputs comprising trains of pulses having selectively variable duration and pulse repetition frequency responsive to a control signal;

memory for storing operational instructions and data;

control means for selectively outputting said control signal responsive to said memory and to input commands;

pulse amplifier means for selectively amplifying pulse amplitude and power responsive to said control means and said pulse generator means;

multiplexer means for providing multiplexer means outputs responsive to selectively multiplexing outputs of said pulse amplifier means and alternatively coupling said multiplexer means output between selected ones of said electrodes responsive to said control means; and,

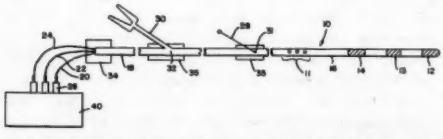
opto-isolator means, for coupling between said multiplexer means outputs and said electrodes, for buffering and optically and electrically isolating said outputs coupling to said electrodes and said electrical stimulation system.

5,081,990

CATHETER FOR SPINAL EPIDURAL INJECTION OF DRUGS AND MEASUREMENT OF EVOKED POTENTIALS

Vedran Deletis, Edison, N.J., assignor to New York University, New York, N.Y.

Filed May 11, 1990, Ser. No. 522,008
Int. Cl.[5] A61N *1/05*
U.S. Cl. 128—642 **15 Claims**



1. A method for determining the effect of epidurally administered drugs on the spinal cord electrical activity of an animal, comprising the steps of:

(1) insertion of a catheter into the epidural space of the spinal cord, said catheter having at least two electrodes and a means for injecting drugs;

(2) administration of a drug through said catheter into the epidural space;

(3) administering an electrical stimulus to the animal;

(4) detecting the evoked response at the electrodes of said catheter; and

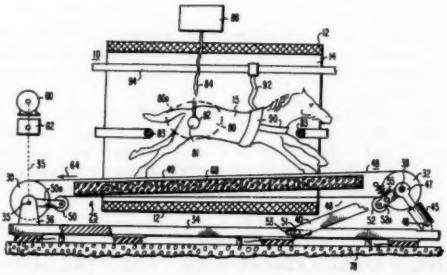
(5) comparing said detected response with the response detected in the same animal when drugs have not been inserted into the epidural space.

5,081,991

METHODS AND APPARATUS FOR USING NUCLEAR MAGNETIC RESONANCE TO EVALUATE THE MUSCLE EFFICIENCY AND MAXIMUM POWER OF A SUBJECT DURING LOCOMOTION

Britton Chance, Philadelphia, Pa., assignor to Performance Predictions, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 323,079, Mar. 14, 1989, Pat. No. 4,981,136, which is a continuation of Ser. No. 934,735, Nov. 25, 1986, abandoned. This application Dec. 27, 1989, Ser. No. 439,799
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.2 **19 Claims**



16. A method for evaluating the ability of a subject to recover from strenuous exercise, comprising:

(a) subjecting the subject to strenuous exercise;

(b) measuring, with an NMR device, at least one of the biochemical relationships present within a muscle mass of the subject following said strenuous exercise; and

(c) recording or observing the return toward normal at-rest values of at least one of the measured relationships or at quantity based upon at least one of the measured relationships while the subject continues to exercise at a leisurely pace.

5,081,992

METHOD FOR CALCULATING LOCALIZED MAGNETIC RESONANCE SPECTRA FROM A SMALL NUMBER OF SPATIALLY-ENCODED SPECTROSCOPIC SIGNALS

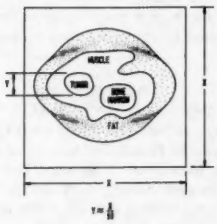
David N. Levin; Xiaoping Hu, both of Chicago; Paul C. Lauterbur, Urbana, all of Ill., and Thomas Spraggins, Charlottesville, Va., assignors to Siemens Medical Systems, Iselin, N.J.

Continuation of Ser. No. 494,867, Mar. 14, 1990, abandoned, which is a continuation of Ser. No. 172,107, Mar. 23, 1988, abandoned. This application Nov. 30, 1990, Ser. No. 622,204
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.2 **8 Claims**

1. A method of producing localized MR spectra from a sample using a relatively small number of spatially-encoded MR spectroscopic signals, comprising the following separate steps:

acquiring purely structural information about the sample using an MR imaging technique;

subsequently acquiring spectroscopic information about the sample using a spatially-encoded MR spectroscopic technique; and



using said structural information together with said spectroscopic information to produce MR spectra which are localized with respect to the sample.

5,081,993

METHODS AND APPARATUS FOR THE EXAMINATION AND TREATMENT OF INTERNAL ORGANS

Richard I. Kitney, Fulham; Keith Straughan, Berkhamsted, and Martin T. Rothman, London, all of United Kingdom, assignors to Circulation Research Limited, Boreham Wood, England

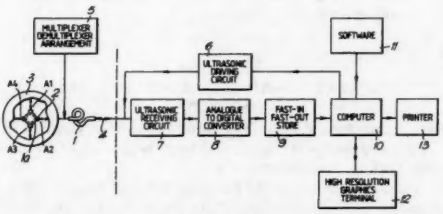
PCT No. PCT/GB88/00971, § 371 Date May 9, 1990, § 102(e) Date May 9, 1990, PCT Pub. No. WO89/04142, PCT Pub. Date May 18, 1989

PCT Filed Nov. 10, 1988, Ser. No. 488,007

Claims priority, application United Kingdom, Nov. 11, 1987, 8726440

Int. Cl.[5] A61B *8/02*

U.S. Cl. 128—661.08 **17 Claims**



1. A method for providing an image of the interior of a human organ or for visualising the flow of blood through it comprising the steps of:

firing ultrasonic signals either from inside or outside the organ,

detecting echo signals of said fired ultrasonic signals,

digitising the echo signals,

storing the digitised echo signals in a digital computer,

manipulating the stored digitised echo signals in such a way as to provide an output from the computer which will give a three-dimensional visual representation of the interior of the organ, and

enabling manipulation of the representation to enable the representation to be viewed from different aspects.

5,081,994

METHOD AND APPARATUS FOR AVOIDING AMBIGUITIES IN A PULSE DOPPLER APPARATUS

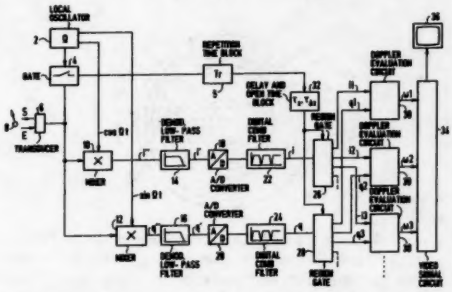
Dietrich Hassler, Uttenreuth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 21, 1991, Ser. No. 673,029

Claims priority, application European Pat. Off., Mar. 23, 1990, 90105583

Int. Cl.[5] A61B *8/02*

U.S. Cl. 128—661.09 **16 Claims**



1. A method for avoiding frequency ambiguities in a pulse Doppler measuring apparatus, comprising the steps of:

periodically transmitting transmission pulses with a pulse repetition time into a region having moving particles;

resolving received echo signals from this region into first and second quadrature signals;

forming an autocorrelation function from one of the quadrature signals of the echo signals and a cross correlation function from both of the quadrature signals at a location of a shift around the pulse repetition time, and forming these correlation functions during a time range of the pulse repetition time wherein the time range is limited by at least twice a pulse travel time time that a pulse requires in order to cover a distance which is traversed by a particle having a maximum velocity to be measured;

calculating a shift of a maximum of at least one of the correlation functions with reference to the pulse repetition time;

calculating an ambiguous mean Doppler radian frequency from values of the correlation functions at the location of the shift around the pulse repetition time, the calculation being a measure for a mean velocity of the moving particles, and defining a frequency range for the mean Doppler radian frequency from the calculated shift of the maximum; and

selecting from the ambiguous mean Doppler radian frequency a value which lies in said frequency range which is defined by the shift of the maximum, and supplying this value for further signal processing.

5,081,995

ULTRASONIC NONDIFFRACTING TRANSDUCER

Jian-yu Lu, and James F. Greenleaf, both of Rochester, Minn., assignors to Mayo Foundation for Medical Education and Research, Rochester, Minn.

Filed Jan. 29, 1990, Ser. No. 471,457

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—662.03 **7 Claims**

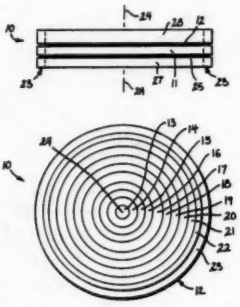
1. An ultrasonic transducer system, the combination comprising:

a piezoelectric element having a pair of spaced, substantially flat surfaces;

an active electrode formed on one of the substantially flat surfaces of the piezoelectric element and having a st of separate segments which are disposed symmetrically about a central axis;

a ground electrode formed on the other of said substantially flat surfaces of the piezoelectric element; and

a multi-channel transmitter for transmitting a signal having an ultrasonic frequency and producing an output signal at each of its channel outputs, which are applied across the



ground electrode and respective ones of the active electrode segments, each channel having means for controlling the amplitude and phase of the signal output to its associated active electrode segment, such that a non-diffracting beam of ultrasound is launched form said one substantially flat surface of the piezoelectric element.

5,081,996

ULTRASONIC IMAGING APPARATUS

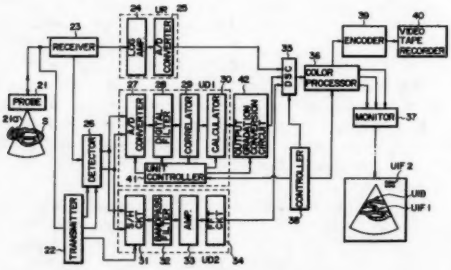
Schuichi Kawasaki, Tochigi; Nobuo Yamazaki, Ootawara, and Takeshi Sato, Tochigi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 24, 1990, Ser. No. 556,524

Claims priority, application Japan, Jul. 26, 1989, 1-192851

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—661.09 **6 Claims**



1. An ultrasonic imaging apparatus comprising:

ultrasonic transducer means for transmitting an ultrasonic beam to a subject and converting echoes from the subject to echo signals;

scan switching means for selectively switching a scanning mode between a first scanning mode and a second scanning mode, said first scanning mode being for repeatedly scanning a predetermined number of rasters in each of a plurality of scanning blocks, each of said rasters having a predetermined number of sample points, and echo signals at said sample points of said rasters are extracted block by block, and said second scanning mode being for repeatedly scanning a plurality of rasters a predetermined number of times while at least one raster is shifted sequentially and data are output at constant intervals;

means coupled to said ultrasonic transducer means and said scan switching means for driving said ultrasonic transducer means in accordance with a scanning mode selected by said scan switching means;

image processing means for signal processing said echo signals output from said ultrasonic transducer means to output an image signal; and

television monitor means for displaying said image signal output from said image processing means as an image.

5,081,997

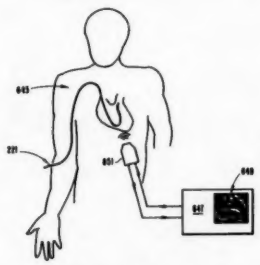
ECHOGENIC DEVICES, MATERIAL AND METHOD

Rodney W. Bosley, Jr., Bloomington; Paul G. Thomson, Fillmore, and Thomas L. Foster, Poland, all of Ind., assignors to Vance Products Incorporated, Spencer, Ind.

Continuation-in-part of Ser. No. 320,967, Mar. 9, 1989, abandoned. This application Jul. 20, 1989, Ser. No. 383,174

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—662.02 **98 Claims**



1. A echogenic medical device insertable into a medium and imageable with sonic imaging equipment, comprising:

an elongated member for insertion into a surrounding medium, said member including a first material having a first predetermined acoustic impedance different from a second predetermined acoustic impedance of said medium, said first and second acoustic impedances having at least a predetermined difference therebetween, said member also including an interface responsive to said sonic beam for producing said image, including a particulate-type, discontinuous curved surface having a dimension less than a wavelength of a sonic beam from said equipment, whereby said difference between said first and second acoustic impedances and said curved surface cooperate in response to said sonic beam to produce an image of said member about said interface.

5,081,998

OPTICALLY STABILIZED INFRARED ENERGY DETECTOR

Mark Yelderman, Plano, Tex.; Daniel S. Goldberger, San Francisco, and James R. Braig, Oakland, both of Calif., assignors to Critikon, Inc., Tampa, Fla.

Continuation-in-part of Ser. No. 401,952, Sep. 1, 1989, abandoned. This application May 11, 1990, Ser. No. 522,177

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—719 **9 Claims**

1. An infrared energy detector for measuring the amount of incident radiation received from a source of infrared energy, comprising:

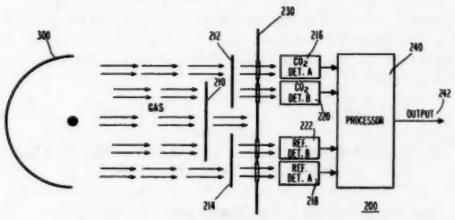
first and second thermopiles, positioned on the same substrate so as to receive incident infrared energy from said infrared energy source, for producing output electrical signals representative of the intensity of said incident infrared energy; and

means for distinguishing desired infrared energy signal components of said incident infrared energy from undesired thermal effects, comprising:

a first optical path between said infrared energy source and said first thermopile, said first optical path includ-

ing an analytical filter chosen to selectively pass an infrared wavelength of a desired infrared energy signal component,

a second optical path between said infrared energy source and said second thermopile, said second optical path



also including said analytical filter chosen to selectively pass the infrared wavelength of the desired infrared energy signal component, and

an attenuating neutral density filter located in only one of said first and second optical paths.

5,081,999

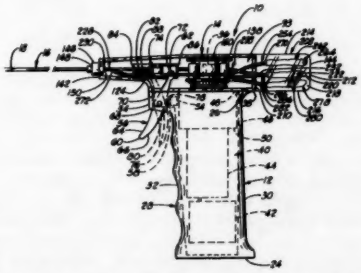
BIOSAMPLE ASPIRATOR

George P. Hemstreet, Oklahoma City; Tom J. Love, Jr., and Karl H. Bergey, both of Norman, all of Okla., assignors to Board of Regents of the University of Oklahoma, Norman, Okla.

Continuation of Ser. No. 307,403, Feb. 6, 1989, Pat. No. 4,982,739. This application Oct. 24, 1990, Ser. No. 602,580

Int. Cl.[5] A61B *10/00*

U.S. Cl. 128—750 **9 Claims**



1. A method for collecting a biosample at a selected biosite from a subject using an aspirator adapted for use in collecting a biosample and for use with a needle having a first end and a second end with a needle opening extending therethrough and intersecting the first and the second ends thereof, the biosample being collected in a biosample collection system in communication with the needle comprising:

providing a biosample collection system;

holding the biosample collection system in one hand, the biosample collection system being held in close proximity to the subject;

inserting the needle into the subject and positioning the first end of the needle at the selected biosite to receive the biosample;

receiving at least a portion of a biosample into the opening of the first end of the needle;

activating the biosample collection system to engage the biosample in the needle to permit transport of the biosample into the biosample collection system, wherein said step of providing comprises providing a biosample collection system comprising: a biosample collection area comprising a biosample container having a biosample collection space adapted for receiving the biosample therein, a pump connected to the biosample collection space for establishing a suction means within the biosample collection system, a drive means connected to the pump for activating the pump in a driven condition, a communicating means for establishing fluidic communication between the needle opening and the biosample collection area, an activating trigger connected to the drive means and to the communicating means for activating the pump and fluidic communication between the needle opening and the biosample container, a biosample connector having a first end and a second end and a connector opening extending therethrough intersecting the first and second ends thereof, the first end of the biosample connector engaging the second end of the needle and the second end of the biosample connector engaging the biosample container, the biosample connector capable of transporting the biosample engaged in the needle to the biosample container; a pump housing having a first end, a second end and a pump housing component space formed generally between the first end and the second end of the pump housing, the pump housing having an upper surface and a lower surface, the biosample connector being disposed in the pump housing component space and extending generally between the first end and the second end of the pump housing, the second end of the needle being connectable to the first end of the biosample connector and the needle being extendable a distance generally from the first end of the pump housing, the biosample container being connected to the second end of the biosample connector generally near the second end of the pump housing, the pump being disposed in the pump housing component space, and a handle housing adapted to be gripped by an individual when the aspirator is being used for obtaining a biosample having an upper end and a lower end, a handle component space being formed in a portion of the handle, a portion of the drive means being disposed generally within the handle component space and a portion of the drive means being disposed generally within the handle component space and a portion of the drive means extending from the handle component space a distance generally above the upper end of the handle housing and being connected with the pump in the pump housing component space;

gripping the trigger, thereby activating the drive means of the pump and the communicating means, causing the pump to generate a suction, and causing fluidic communication between the needle and the biosample collection area to be generated;

establishing a vacuum capable of continuous suction in the biosample collection system;

aspirating a biosample from the first end of the needle and the needle opening and movably transferring the biosample through the needle opening and through the biosample connector to the biosample collection space; and

flushing the biosample from the first end of the needle and the needle opening to the biosample collection space, wherein the communicating means establishes fluidic communication between the needle and the biosample collection space to aid in the delivery of the biosample to the biosample collection space.

5,082,000

BIOPSY FORCEPS WITH CALDE CONTROLLED JAWS

George J. Picha, Independence, and Dean J. Secrest, Euclid, both of Ohio, assignors to Applied Medical Technology, Inc., Independence, Ohio

Filed Nov. 29, 1990, Ser. No. 619,733

Int. Cl.[5] A61B *10/00*

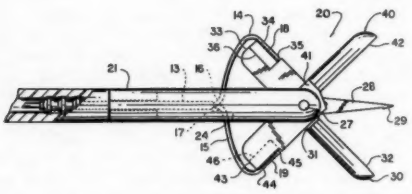
U.S. Cl. 128—751 **16 Claims**

1. Biopsy forceps including a flexible sheath, a control wire extending through and movable within the sheath, a pair of cup-shaped jaws movable by the control wire to a closed position to capture a sample of tissue, and manual operating means connected at the rearward end of the sheath for extend-

ing and retracting the control wire linearly relative to said sheath, said forceps further comprising:

an end housing connected to the forward end of said sheath and defining a central passage for receiving said control wire;

a pair of tongs pivotally connected to the forward end of said housing and having said jaws connected to their respective outer ends, said tongs each having a rearwardly extending lever arm whereby said tongs are movable about a common pivot axis between a closed position wherein said jaws are closed to capture a sample of tissue and an open position wherein said jaws are open and said lever arms extend radially outward in opposite directions; and



a pair of relatively stiff, flexible cable lengths connected at their inner ends to said control wire and rigidly connected at their outer ends respectively to said lever arms in coextensive relation therewith so that at least a portion of each cable length forms an extension of the respective lever arm,

whereby when said control wire is retracted by said manual operating means, said lever arms are moved to their closed position and when said control wire is extended by said manual operating means said cable lengths flex outwardly in opposite directions to move said lever arms to their open position.

5,082,001

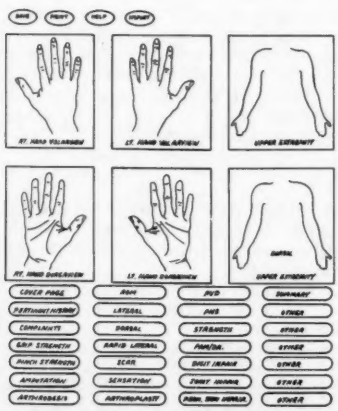
ENHANCED COMPUTER BASED UPPER EXTREMITY EVALUATION SYSTEM

Michael W. Vannier, 709 Riverview Dr., Alton, Ill. 62002; Paul G. Groszewski, 5622 Delmar Apt. 604, St. Louis, Mo. 63112, and Pamela J. Grasse, 7053 Pershing Ave., St. Louis, Mo. 63130

Continuation-in-part of Ser. No. 314,188, Feb. 27, 1989, Pat. No. 4,922,925. This application May 8, 1990, Ser. No. 520,527

Int. Cl.[5] A61B *5/103*

U.S. Cl. 128—774 **7 Claims**



1. In a computer based clinical evaluation device for measuring various physical parameters of a patient's anatomy, the device including means for a therapist to measure and input various physical locations of selected points with respect to a common reference with a pointer means, the improvement comprising means for defining a matrix in a space disassociated from a computer display, said matrix being comprised of a plurality of defined areas, each of said areas corresponding to a desired command or series of commands for said computer so that as said pointer means is positioned at one of said defined areas, said command or series of commands is performed by said computer.

5,082,002

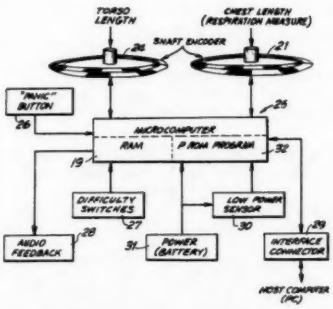
AUTOMATIC OPERANT CONDITIONING SYSTEM ESPECIALLY FOR SCOLIOSIS

Gordon Silverman, New York, N.Y., and Barry Dworkin, Hershey, Pa., assignors to The Rockefeller University, New York, N.Y.

Filed May 25, 1989, Ser. No. 357,463

Int. Cl.[5] A61B *5/103*

U.S. Cl. 128—781 **12 Claims**



1. A portable apparatus for the treatment of a patient having a posture characterized by idiopathic scoliosis, said apparatus to be worn by the patient and utilizing biofeedback to improve the posture of the patient, the apparatus comprising:

(a) a first cable which is expandable and contractable and is adapted to be removably positioned around the chest of the patient to measure respiration (RES);

(b) a second cable which is expandable and contractable and is adapted to be removably positioned longitudinally around the trunk of the patient to measure the greater circumference of the trunk;

(c) first and second transducer means connected to said first and second cables respectively to measure changes in the expansion and contraction of the respective cables and convert said chances into digital electrical signals;

(d) a digital microcomputer connected to said transducer means to receive said digital signals and having digital programmed memory and additional digital memory;

(e) a feedback stimulus means controlled by the microcomputer to stimulate the patient for reinforcement by applying a stimulus to the patient;

(f) computation means to compute an actual effective spine length R during sample periods where $R=T-K\cdot RES$, T being a spine length during proper posture of the patient and K being a coefficient of coupling between T and RES; and

(g) control means to control said feedback stimulus means so that the stimulus is applied only if $R<C$ where C is an adjustable criteria;

(h) adjustment means to automatically adjust C based upon the prior history of R and C of the patient;

(i) compliance means to determine if the apparatus is being worn by the patient; and

(j) multiplexing means to sample data from said first and

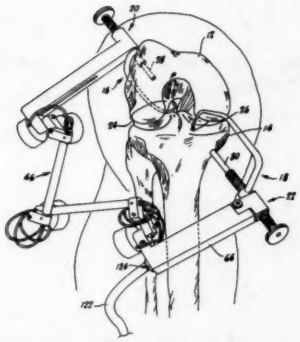
second transducer means and power saving means to control said multiplexing means so the multiplexing means samples data at a slower rate if the compliance means has determined that the apparatus is not being worn.

5,082,003

APPARATUS FOR DETERMINING INTERSKELETAL DISTANCES

Steve Lamb, Hayward, Calif., and Alan A. Halpern, Kalamazoo, Mich., assignors to Orthopedic Systems, Inc., Hayward, Calif.

Filed Jan. 5, 1990, Ser. No. 461,180
Int. Cl.[5] A61B *5/11*
U.S. Cl. 128—782 **17 Claims**



1. An apparatus for determining the distance between points on first and second skeletal bodies during movement of the first and second skeletal bodies relative to one another, comprising:

a. a first aimer including a first tip and a first base, said first aimer including means for attaching the first tip and first base to the first skeletal body, said first base of said first aimer including a first tube permitting access to the first skeletal body;

b. a second aimer including a second tip and a second base, said second aimer including means for attaching the second tip and second base to the second skeletal body, said second base of said second aimer including a second tube permitting access to the second skeletal body;

c. an articulated linkage having a first end portion and a second end portion, said first end portion of said articulated linkage being fixed to said first aimer, said second end portion of said articulated linkage being fixed to said second aimer;

d. means for determining angular motion in said articulated linkage correlated to movement between said first and second tips attached to the first and second skeletal bodies; and

e. means for transforming said articulated linkage angular motion into a measurement of distance between said first and second skeletal bodies.

5,082,004

PROPHYLACTIC WITH GLANS PENIS STIMULATION

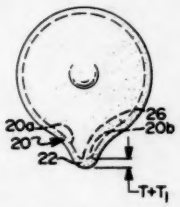
Alla V. K. Reddy, 9 Webster Ct., Plainsboro, N.J. 08536

Continuation-in-part of Ser. No. 526,843, May 22, 1990, Pat. No. 5,027,831. This application Jun. 29, 1990, Ser. No. 545,905
Int. Cl.[5] A61F *6/04*
U.S. Cl. 128—844 **36 Claims**

1. A prophylactic pouch for use by a male having an elongated tubular portion forming a first pouch having a circumference and having an open end and a closed end characterized by:

said tubular portion being formed of thin membrane material and having a generally constant diameter from the open end to the closed end to define a longitudinally directed chamber for a male penis; and

a second pouch formed of thin membrane material extending outwardly of said first pouch; said second pouch having an interior space and including an entrance with an open area extending lengthwise of the glans penis; said entrance



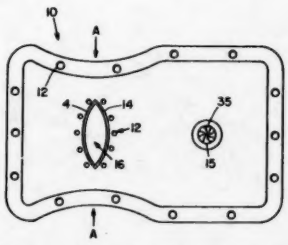
communicating said interior space directly with said longitudinally directed chamber at a point overlying the glans penis; said second pouch having an inner surface moveable through said entrance and against the glans penis for movement; back and forth thereon during coitus for providing stimulation thereto.

5,082,005

SURGICAL ACCESS DEVICE

Antoine Kaldany, Chestnut Hill, Mass., assignor to New England Deaconess Hospital, Boston, Mass.

Filed Dec. 18, 1990, Ser. No. 629,148
Int. Cl.[5] A61B *19/08*
U.S. Cl. 128—850 **19 Claims**



1. A surgical access device for sub-cutaneous implantation in a patient in a space adjacent a bodily cavity for providing convenient access to an incision made in said cavity, comprising:

a) a resilient plate extending in a first plane;

b) attachment points for securing the plate subcutaneously;

c) an access in the plate formed by a deformable slit extending through the plate and

d) a skirt extending from the slit in a direction transverse the first plane a sufficient distance, such that when the plate is implanted, the skirt extends between the incision subcutaneously for preventing closure of the incision.

5,082,006

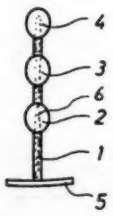
DEVICE FOR PREVENTING INVOLUNTARY MICTURITION

Linda Jonasson, Bjornsonsparken 76, DK-9380 Vestbjerg, Denmark

PCT No. PCT/DK88/00152, § 371 Date Mar. 15, 1990, § 102(e) Date Mar. 15, 1990, PCT Pub. No. WO89/02257, PCT Pub. Date Mar. 23, 1989
PCT Filed Sep. 14, 1988, Ser. No. 469,533
Claims priority, application Denmark, Sep. 15, 1987, 4840/87
Int. Cl.[5] A61F *5/48*
U.S. Cl. 128—885 **27 Claims**

1. A device for preventing involuntary micturition, prefera-

bly in human females, comprising a substantially solid oblong, substantially form-stable flexible body with varying cross-sectional area depending on the distance from an end of the body and providing at least one knob forming a thickening arranged



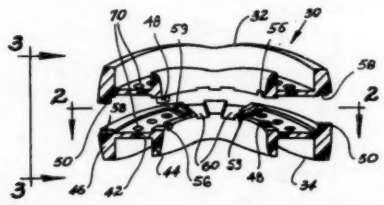
at a distance from a first end of the body, said knob sized to pass into the urethra and to retain the device in the urethra, and that the first end of the oblong body is provided with a comparatively thin, transverse flap, extending perpendicular to the axis of the body.

5,082,007

MULTI-LAMINAR MOUTHGUARDS

Loren S. Adell, 200 Adell Blvd., Sunnyvale, Tex. 75182, assignor to Loren S. Adell and Michael Adell, Sunnyvale, Tex.

Filed Jan. 24, 1990, Ser. No. 469,286
Int. Cl.[5] A61C *5/14*
U.S. Cl. 128—861 **28 Claims**



1. A mouthguard comprising a main body having two individual parts, in which one of said two parts forms an upper trough portion and the other of said two parts forms a lower trough portion, and liner material of a lower durometer than the durometer of said two main body parts lines both troughs and also integrally joins the liner material lining said upper trough portion with the liner material lining said lower trough portion such that the liner material interlocks said two main body parts in juxtaposition to create an integral mouthguard unit wherein said one main body part juxtaposedly overlies said other main body part.

5,082,008

SMOKING ARTICLE

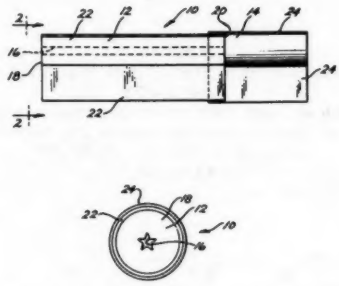
Robert R. Johnson, 503 Penwood Rd., Louisville, Ky. 40206

Filed Dec. 9, 1988, Ser. No. 281,591
Int. Cl.[5] A24F *1/22*; A24B *15/00*
U.S. Cl. 131—194 **8 Claims**

1. A smoking article comprising:

a fuel column comprising an inner column of tobacco material, and an outer column of a non-tobacco combustible fuel material longitudinally coextensive with and concentrically surrounding the inner column; and,

a corrugated channel longitudinally extending through the inner column, the channel being coextensive with and



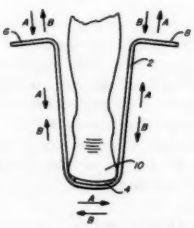
concentric to the inner column such that the channel is open to both ends of the fuel column.

5,082,009

HAND-HELD FOOT CALLUS REMOVER

Marsha J. Cromer, 17th ASG-CM Box 2264, APO San Francisco, Calif. 96504

Filed Aug. 28, 1989, Ser. No. 398,943
Int. Cl.[5] A45D *29/18*
U.S. Cl. 132—76.4 **16 Claims**



1. A hand-held device for abrading tissue from a sole of a human foot, the device having application for use by an infirmed or handicapped person, said device comprising:

means for abrading tissue by rubbing contact with a surface of said tissue;

means for supporting said abrading means, said supporting means having first and second ends;

first means for applying a first tensile force to said first end of said supporting means; and

second means for applying a second tensile force to said second end of said supporting means;

wherein said supporting means, said first means and said second means comprise a unitary layer of flexible material;

wherein said abrading means is arranged only on a substantially central portion of a surface of said unitary layer of flexible material; and

further, wherein said unitary layer of flexible material is of sufficient length to permit a user, in a seated position to abrade the soles of his feet while remaining in a substantially upright position.

5,082,010

METHOD OF ELONGATING HAIR

Peter Skaryd, and Norma Skaryd, both of Frankfurter Str. 184, D-6078 Neu-Isenburg, Fed. Rep. of Germany

Filed May 13, 1991, Ser. No. 698,784

Claims priority, application Fed. Rep. of Germany, May 29, 1990, 90110120

Int. Cl.[5] A41G *5/00*

U.S. Cl. 132—201 18 Claims

1. A method of elongating head-hair of a person with elongating hair, comprising: cleaning the head-hair to be elongated with cleaning means thereby releasing said head-hair to be elongated from oil; dividing a plurality of dry head-hairs which are to be elongated and dividing at least approximately the same plurality of an elongating hair, so that two tufts of hairs are formed each having a free end; twirling the tufts at their said free ends to form two twirled tuft-ends; overlapping the two twirled tuft-ends by a predetermined distance and twirling together the overlapping tuft-ends; and adhering the twirled overlapping tuft-ends at ambient temperature with an adhesive.

5,082,011

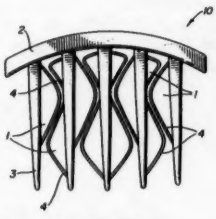
HAIR FASTENING DEVICE

Fu-Chi Wu, 17336 Chase St., Northridge, Calif. 91328

Filed Aug. 17, 1990, Ser. No. 568,981

Int. Cl.[5] A45D *8/02*

U.S. Cl. 132—281 18 Claims



1. A hair fastening device including:

a. a support structure;

b. a plurality of spaced-apart teeth, fastened to the support structure, for separating strands of hair; and

c. a plurality of leaf springs, each attached to a respective tooth and positioned between such tooth and an adjacent tooth, for clasping hair passing between such tooth and the adjacent tooth, wherein, in at least one space between two adjacent teeth, two of said springs are each attached to a respective tooth to face one another, and at least one of said two springs has greater flexibility than said teeth.

5,082,012

SIMPLIFIED APPARATUS FOR DECONTAMINATING ELECTRICAL APPARATUS CONTAMINATED WITH PCBS

Michael J. Massey, 3123 University Blvd., Houston, Tex. 77005; David R. Hopper, 427 Elm St., Concord, Mass. 01742, and Mark N. DeDecker, 7819 C. Hills & Dales Rd. NW., Massillon, Ohio 44646

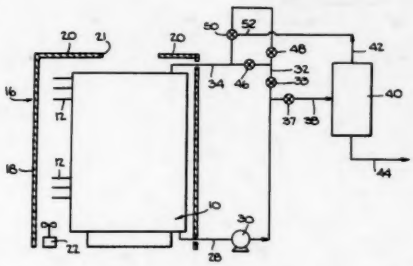
Continuation of Ser. No. 322,498, Mar. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 78,480, Jul. 27, 1987, Pat. No. 4,814,021, which is a continuation-in-part of Ser. No. 891,612, Aug. 1, 1986, abandoned. This application Jul. 2, 1990, Ser. No. 547,546

Int. Cl.[5] B08B *3/10*

U.S. Cl. 134—109 8 Claims

1. An apparatus for cleaning fluid contaminate with polychlorinated biphenyls which includes means for removing said contaminated fluid from a contaminated apparatus, a distillation means to receive said contaminated fluid configured to form an overhead vapor stream consisting essentially of decontaminated fluid and a bottoms stream containing said polychlorinated biphenyls, and means for returning fluid to said contaminated apparatus, the improvement which comprises:

a venturi configured to receive a portion of the returning



fluid, as a liquid, which is passed through said venturi and having a side port for receiving at least a portion of said overhead vapor stream whereby the heat in said vapor stream is recovered in said returning liquid fluid.

5,082,013

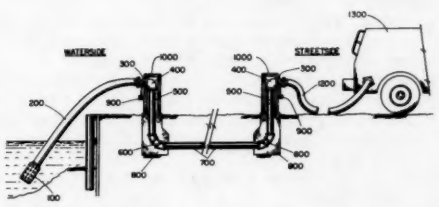
FIREFIGHTING WATER DELIVERY SYSTEM AND METHOD

John R. Scheib, 1216 Sailfish, Hitchcock, Tex. 77563

Filed Jun. 21, 1990, Ser. No. 541,338

Int. Cl.[5] E03B *7/00, 9/02*

U.S. Cl. 137—1 18 Claims



1. A method of delivering water from a body of water to a pumper truck on the ground in the vicinity of the body of water comprising the following steps:

engaging the body of water with a waterside conduit having a strainer to prevent fouling for removing from the body of water a portion thereof,

transferring the removed water through the waterside conduit to a first riser having the physical characteristics of a fire hydrant for accepting the water from the waterside conduit and for transferring the water to an underground conduit,

passing the water from the first riser to an underground conduit for transferring the water to a location removed from the first riser where water is required for fighting fires,

raising the water through a second riser having the physical characteristics of a fire hydrant for providing an above ground outlet for the water,

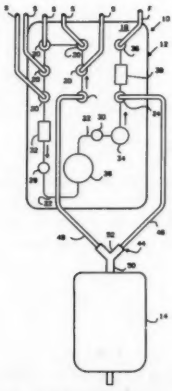
engaging the second riser with a suction hose in operative association with a pumper truck for pumping the water from the body of water through the waterside conduit for transferring the water in the underground conduit to the second riser and ultimately to the pumper truck for use in fighting fires at a location in the vicinity of the body of water.

5,082,014

SOLUTION PUMPING SYSTEM INCLUDING DISPOSABLE PUMP CASSETTE

Michael D. Olichney, Boulder, Colo., assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 1, 1989, Ser. No. 444,487
Int. Cl.[5] E03B *7/07*
U.S. Cl. 137—1 **9 Claims**



1. A method of compounding a liquid admixture using a pump cassette having a plurality of liquid inlets joined in fluid communication with a liquid outlet via a liquid flow path, and positive displacement pump means for pumping liquid from a selected one of said inlets to said outlet, said method comprising the steps of:

providing an admixture container;

providing liquid tubing means for joining said liquid outlet and an upstreammost one of said liquid inlets in fluid communication with said admixture container;

compounding a liquid admixture in said admixture container by operating said pump means to pump at least one source solution from a downstream one of said liquid inlets through said liquid outlet and into said admixture container; and

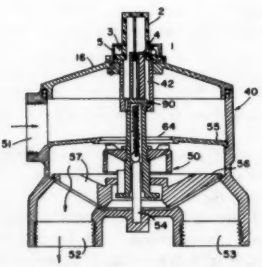
selective recirculating said liquid admixture through said pump cassette.

5,082,015

SEQUENCING VALVE POSITION INDICATOR

Joseph R. Baker, 73 Fairview East, Tequesta, Fla. 33469

Filed Jul. 1, 1991, Ser. No. 723,821
Int. Cl.[5] F16K *11/02*
U.S. Cl. 137—119 **12 Claims**



1. In an automatic sprinkling valve having a housing, an inlet and a plurality of outlets in said housing, a movable valve member within said housing constructed to connect the inlet sequentially with each of the outlets, a mechanism responsive to sequential increases and decreases in pressure at the inlet for moving said valve member in a combined rotary motion about a central axis and reciprocating motion to connect the inlet sequentially with each of said outlets, the improvement comprising:

(a) an enclosure attached to the exterior of said housing, said enclosure being at least partially transparent for viewing the contents thereof and fluidically isolated from the interior of said housing;

(b) a first magnetic member contained within said enclosure, said first member arranged to rotate about said central axis;

(c) a second magnetic member, said second magnetic member contained within said housing and arranged to rotate about said central axis in conjunction with the rotary motion of said valve member, said second magnetic member and said first magnetic member being arranged sufficiently close together that said first magnetic member is attracted to said second magnetic member through the wall of said housing and rotates in conjunction with said second magnetic member and said valve member so that the position of the first magnetic member provides a visual indication of the particular outlet that is connected to the inlet; and

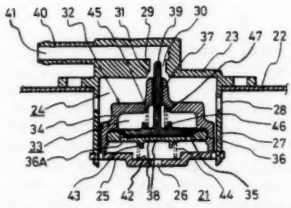
(d) at least one of said magnetic members is a permanent magnet.

5,082,016

ADHESION PREVENTION DEVICE IN LIQUID SURFACE DETECTING VALVE

Hideyo Nakamura, Ibaraki, Japan, assignor to Kyosan Denki Kabushiki Kaisha, Ibaraki, Japan

Filed Dec. 21, 1990, Ser. No. 632,375
Claims priority, application Japan, Dec. 22, 1989, 1-147028
Int. Cl.[5] F16K *17/00, 31/22*
U.S. Cl. 137—202 **4 Claims**



1. An adhesion prevention device in liquid surface detecting valve comprising a valve casing fixed to a fuel tank, a float chamber provided at the valve casing, a float disposed in the float chamber and provided with a valve, a valve port provided on the valve casing, a diaphragm chamber defined in the float, a diaphragm for partitioning the diaphragm chamber and a rod provided on the diaphragm and penetrating the valve of the float, the tip end of the rod being brought into contact with the valve casing when the pressure in the fuel tank increases in the state wherein the valve closes the valve port.

5,082,017

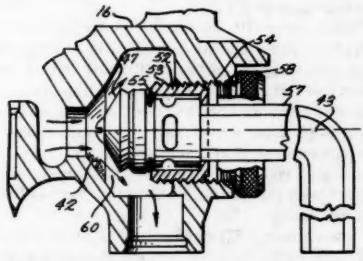
ANTI-SIPHON BALL COCK WITH VOLUME CONTROL

Gordon L. Spurgeon, Surfside Beach; Charles M. McGhee, Myrtle Beach, both of S.C., and Frank C. Evans, Hillsdale, Mich., assignors to Wolverine Brass, Inc., Conway, S.C.

Filed Feb. 25, 1991, Ser. No. 659,694
Int. Cl.[5] F16K *24/02*
U.S. Cl. 137—217 **26 Claims**

1. In a ball cock having a unitary casing divided into a valve chamber and a discharge chamber, each having an inlet and outlet, means connecting the outlet of said valve chamber with the inlet of said discharge chamber, a float controlled valve in said valve chamber for feeding fluid to said discharge chamber,

a hush tube connected to said outlet of said discharge chamber, a combined adjustable volume rate regulator and anti-siphon valve assembly within said discharge chamber in the fluid path between said discharge chamber inlet and said hush tube, said combined volume rate regulator and anti-siphon valve assembly comprising a valve seat at said discharge chamber inlet, a tubular barrel aligned with said inlet valve and having an opening at one end in communication with the atmosphere and



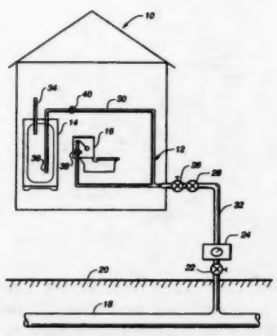
a rim valve seat at the other end; and a double acting valve horizontally slidable in said tubular barrel between a first position wherein said double acting valve is in spaced confronting relationship with said inlet valve seat and is in engagement with said rim valve seat to a second position wherein said double acting valve abuts said inlet valve seat and is disengaged from said rim valve seat, and means for adjusting the spacing between the inlet valve seat and the double acting valve to effect volume rate regulation.

5,082,018

SYSTEM FOR PREVENTING LOSS OF WATER FROM THE WATER LINE OF A BUILDING

Frederick A. Caswell, 337 La Tierra Buena, Danville, Calif. 94526, and Oscar O. Caswell, 16632 Hannah Dr., San Lenadro, Calif. 94578

Filed Feb. 11, 1991, Ser. No. 653,355
Int. Cl.[5] F16L *5/00*
U.S. Cl. 137—357 **4 Claims**



1. Emergency water supply apparatus comprising, in combination:

a water line having a first water line portion substantially disposed within a building, said water line leading to a supply line and having a second water line portion disposed externally of said building;

valve means located externally of said building and closely adjacent thereto for retaining water in said first water line portion in the event of a loss of water pressure in said second water line portion, said valve means comprising a one-way check valve connected to said water line and located at the juncture external of said building of said first water line portion and said second water line portion and operable to permit the flow of water from said second water line portion to said first water line portion and to substantially prevent the flow of water from said first water line portion to said second water line portion whereby water in said first water line portion will provide an emergency supply of water for occupants of said building which may be accessed either internally or externally of said building; and

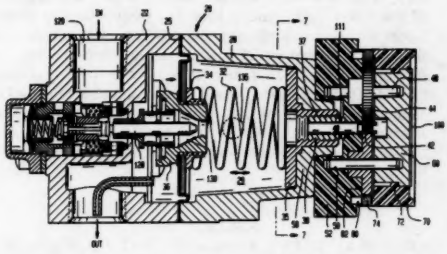
at least one relief valve operatively associated with said first water line portion to relieve water pressure in said first water line portion when said valve means prevents the flow of water from said first water line portion to said second water line portion and after the water pressure in said first water line portion attains a predetermined magnitude.

5,082,019

CALIBRATED QUICK SETTING MECHANISM FOR AIR PRESSURE REGULATOR

Leonard P. Tetrault, Northport, N.Y., assignor to Aerodyne Controls Corporation, Ronkonkoma, N.Y.

Filed Mar. 27, 1991, Ser. No. 675,873
Int. Cl.[5] G05D *16/06*
U.S. Cl. 137—505.38 **8 Claims**



1. A valve adjustment mechanism for an air pressure regulator, comprising:

a bonnet;

a valve operating coil spring in said bonnet;

a valve operating means having one end abutting one end of said coil spring;

a spring plate disposed nonrotatably in said bonnet and abutting the other end of said coil spring, said plate having an internally threaded central portion;

a rotatable pinion shaft having a threaded end engaged with said threaded central portion of said pressure plate, for moving said pressure plate axially of aid coil spring when said pinion shaft is turned;

a gear train operatively engaged with said pinion shaft to rotate the same for moving said pressure plate axially of said coil spring, to adjust the pressure exerted thereof on said valve operating means and thereby adjust the pressure of air passed by said valve; and

a knob ring engaged with said gear train for manually rotating the same,

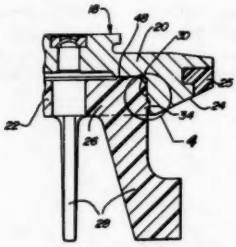
said bonnet having means for limiting rotation of said knob ring to less than 360° for quickly and instantly setting said regulator to pass air at selected pressure therethrough.

5,082,020

VALVE BODY FOR OILFIELD APPLICATIONS

Thomas F. Bailey, and John E. Campbell, both of Houston, Tex., assignors to MASX Energy Services Group, Inc., Houston, Tex.

Continuation of Ser. No. 312,855, Feb. 21, 1989, abandoned.
This application Dec. 5, 1990, Ser. No. 622,302
Int. Cl.[5] F16K *15/06*
U.S. Cl. 137—533.21 8 Claims



1. A valve to pump fluids, said valve sealingly cooperating with a valve seat having a throughbore, said valve comprising:

a valve head having an axial cavity with an interior annular side wall;

a valve body attached to said valve head, said valve body including an axial neck portion received within said cavity of said valve head and having an outer annular surface corresponding to said interior annular side wall of said cavity; and

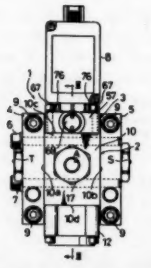
means to lockingly attach said valve body to said valve head, said valve head being made of a metal material and said valve body being made of an elastomer material, said locking means including at least one annular tongue formed on said outer annular surface of said neck portion of said valve body, said at least one tongue having a frusto-conical upper surface, a cylindrical intermediate surface and a curved lower surface said at least one annular tongue lockingly engaging at least one corresponding annular groove formed in said interior annular side wall of said internal cavity of said valve head thereby preventing inadvertent withdrawal of said neck portion from said cavity and separation of said valve body from said valve head.

5,082,021

THREE WAY VALVE ASSEMBLY WITH PRESSURE COMPENSATING VALVE

Keitaro Yonezawa, Kobe, Japan, assignor to Kabushiki Kaisha KOSMEK, Kobe, Japan

Filed Nov. 30, 1990, Ser. No. 619,952
Claims priority, application Japan, Dec. 7, 1989, 1-320109
Int. Cl.[5] F15B *13/04*
U.S. Cl. 137—596.2 6 Claims



1. In a three way valve assembly with a pressure compensating valve, which valve assembly including left and right end plates (4)(5) having a pressure supply port (S) and a pressure discharge port (T),

a three way valve (2) having a first housing (10) provided with a work port (A), said work port (A) being adapted to be selectively communicated to said pressure supply port (S) and to said pressure discharge port (T),

a pressure compensating valve (3) having a second housing (57) and adapted to release a pressure abnormally raised at a very slow speed within said work port (A) to said pressure discharge port (T),

said first housing (10) having left and right end surfaces (10*a*)(10*b*), upper and lower end surfaces (10*c*)(10*d*) and front and back end surfaces (10*e*)(10*f*) and disposed between said left and right end plates (4)(5), and

at least one assembly bolt (6)(7) serving to tighten said end plates (4)(5) from the left and right sides to the central side, the improvement comprising:

said left and right end plates (4)(5) being brought into contact with the left and right end surfaces (10*a*)(10*b*) of said first housing (10),

said second housing (57) being brought into contact with one end surface (10*c*) of the upper, lower, front and back end surfaces (10*c*)(10*d*)(10*e*)(10*f*) of said first housing (10), and

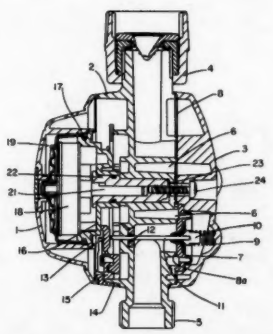
a fixing means (67) serving to fix said second housing (57) to said first housing (10).

5,082,022

MULTIPLE OUTLET WATER TIMER

Jeffrey W. Boundy, Albert Park, Australia, assignor to Sabco Limited, Australia

Filed Sep. 21, 1990, Ser. No. 586,427
Claims priority, application Australia, Sep. 28, 1989, PJ6632
Int. Cl.[5] F16K *11/10*
U.S. Cl. 137—624.12 3 Claims



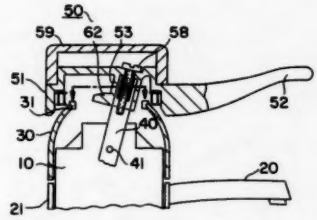
1. A multiple outlet water timer having a circumferential body, an inlet to the body and a plurality of outlets circumferentially arranged around the body, the flow to each of the outlets being controlled by its own respective valve, a case containing a clockwork timer mechanism having a shaft non-rotatably mounted in the body the clockwork timer being drivingly connected to said case which thus rotates about the said shaft, said case having a circumferential wall and a base, a cam on the base of the case co-operating with a cam follower for each respective valve, characterized in that each cam follower is adjustable radially of the clockwork mechanism case so that the duration of opening of its associated valve is individually adjustable, the valves being opened in sequence as the cam on the case of the clockwork mechanism actuates the valves.

5,082,023

SINGLE-HANDLE FAUCET

Stephane M. D'Alayer de Costemore d'Arc, Brussels, Belgium, assignor to Staar S. A., Belgium

Filed Jul. 3, 1990, Ser. No. 547,203
Claims priority, application Belgium, Oct. 31, 1989, 8901157
Int. Cl.[5] F16K *11/00, 31/44*
U.S. Cl. 137—636.3 20 Claims



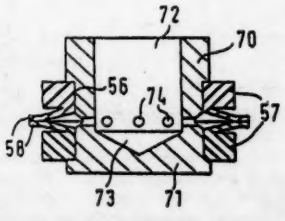
1. A single lever faucet comprising:
a control valve;
a movable connecting rod which operates said control valve;
a handle extending from said connecting rod to move said rod, said handle being movable in a first direction of movement between an OFF position and a full ON position to control said control valve to vary flow rate of fluid from the faucet, said handle being movable in a different second direction of movement between a cold position and a hot position to control said control valve to vary temperature of fluid from the faucet,; and
a movable limiting member which prevents said handle from being moved in the first direction of movement beyond an intermediate position between the OFF position and the full ON position when said member engages a stop, thereby to limit flow rate from the faucet; and
user operated means for moving said member to a position where it clears the stop thereby overriding the flow rate limit when said handle is moved in the first direction of movement beyond the intermediate, said user operated means being moved by a manual push from a user to move said member and override the flow rate limit when the handle is at and position in the second direction of movement between the cold position and the hot position.

5,082,024

VALVE ASSEMBLY INCLUDING A HOLLOW CONDUIT

Bernd Federhen, Siegen, and Manfred May, Niederfischbach, both of Fed. Rep. of Germany, assignors to Alb. Klein GmbH & Co. KG, Niederfischbach, Fed. Rep. of Germany

Division of Ser. No. 342,245, Apr. 24, 1989, Pat. No. 4,955,761.
This application Sep. 4, 1990, Ser. No. 577,261
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1989, 3902388
Int. Cl.[5] F16K *15/14*
U.S. Cl. 137—860 3 Claims



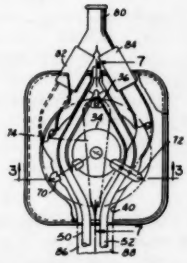
1. A valve assembly comprising: a hollow conduit, said hollow conduit having 1) an interior peripheral surface which defines a flow passage, 2) an exterior peripheral surface, and 3) radial passage means extending through said conduit for communicating said flow passage with said exterior peripheral surface; a continuous recess formed in the exterior peripheral surface of said hollow conduit in the region of said radial passage means; valve means positioned within said recess in said exterior peripheral surface and proximate to said radial passage means, said valve means comprising 1) a pressure ring portion having an inside surface abutting said recess and an outside surface which extends beyond said exterior peripheral surface, and 2) a continuous lip portion pivotably connected to said pressure ring at said inside surface and extending in a substantially radial direction therefrom beyond said outside surface of said pressure ring; and seat means adjacent said continuous lip portion for selectively sealing and unsealing said radial passage means upon pivoting of said continuous lip portion so as to allow for flow through said radial passage means in one direction.

5,082,025

ANTEGRADE-RETROGRADE SWITCH AND OCCLUDER AND SYSTEM FOR USING THE SAME

James H. DeVries; Michael R. DeVries, both of Grand Rapids; William E. Sidor, Jr., Rockford; Ronald A. DeVries, Zeeland, and Stuart J. Marcadis, Wyoming, all of Mich., assignors to DLP, Inc., Grand Rapids, Mich.

Filed Nov. 23, 1990, Ser. No. 617,167
Int. Cl.[5] F16K *7/02*
U.S. Cl. 137—863 20 Claims



15. A control for administering antegrade and retrograde cardioplegic solution to a heart during open heart surgery which comprises:
(a) a control switch body having divided first and second passages for parallel antegrade and retrograde flow,
(b) means in said body movable from a position to open said passages and to a position to close said passages,
(c) a switch rotor having cam surfaces to actuate said means in various rotated positions of said rotor, to open both passages in a prime position, close both said passages in an off position, open a first passage and close a second passage in an antegrade position, and open a second passage and close a first passage in a retrograde position, and
resilient flexible tubes disposed in said first and second passages, said means in said body movable from a position to open and close said passages comprising occluders respectively mounted transversely of said passages and positioned to be moved against said tubes to compress the tubes to a closed position when contacted by a cam surface of said switch rotor,
said cam surfaces including a relatively flat surface that is located over said occluders in the prime position of said rotor leaving said tubes open, and rising cam surfaces on each side of a main raised cam surface to cam said occluders into closed positions, respectively to an off position midway of said raised surfaces with both tubes closed, an antegrade position in which a first of said occluders is depressed by a cam surface and the second is under a flat surface to open a first tube, and a retro-

grade position in which said first of said occluders is under a flat surface to open a tube and said second of said occluders is depressed by a cam surface to close the second tube.

5,082,026

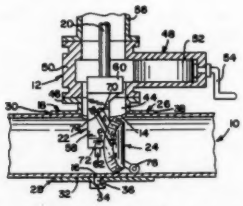
PIPELINE PLUGGER

Garland Y. Smith, 605 Lakeside Dr., Hinsdale, Ill. 60521

Filed Feb. 17, 1987, Ser. No. 15,157

Int. Cl.[5] F16L *55/10*

U.S. Cl. 138—94 16 Claims



1. A pipeline plugger for mounting in cooperation with a pipe having a longitudinal axis and an insertion port for selectively sealing closed the pipe, said pipe having a pin aperture substantially opposite to the insertion port, said pipeline plugger comprising, in combination, a housing adapted for mounting on the pipe adjacent to the insertion port, a rod axially movably mounted in the housing, a carrier block connected on one side to one end of the rod and being insertable into the pipe through the insertion port, a holding pin mounted on the carrier block on a side opposite to the side connected to the rod, said holding pin being adapted for positioning in the pin aperture of the pipe, and a plug pivotally connected to the carrier block, said plug being adapted to be positioned in the pipe to stop the flow of fluid past the plug through the pipe.

5,082,027

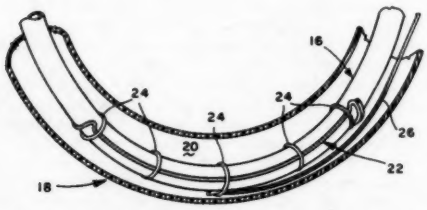
HOSE ROTATION RESTRAINER

John H. Stanley, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 13, 1989, Ser. No. 420,510

Int. Cl.[5] F16L *9/18*; B65B *3/18*

U.S. Cl. 138—113 4 Claims



1. In a coaxial vapor recovery hose assembly having an inner product hose having an outer radius and an outer diameter, an outer hose coaxially surrounding said product hose and defining therewith an annular vapor passageway therebetween and a suction tube which extends to a low point of a catenary of the hose assembly where a liquid would accumulate while in use, a cradle-shaped hose rotation restrainer, attached to said product hose at said low point and comprising a pair of arcuate, parallel members connected at each end thereof by semicircular loops having a radius equal to the outer radius of the product hose, said members being spaced apart a distance equal to the outer diameter of the product hose.

5,082,028

POOL CLEANER SUCTION PIPE

Jean-Jacques Leonard, 401 Loerie Avenue, Douglasdale Ext. 21, Sandton, Transvaal, South Africa

Filed Aug. 30, 1989, Ser. No. 400,541

Claims priority, application South Africa, Aug. 30, 1988, 88/6432

Int. Cl.[5] F16L *9/12*

U.S. Cl. 138—118 3 Claims

1. A suction pipe for a suction-type submerged pool cleaner, the suction pipe linking a suction source of the pool cleaner to a suction head, said suction pipe comprising:

a first section having means for connecting to the suction source, and

a second section having means for connecting to the suction head, and

means for shaping said second section into a substantially helical shape, wherein said shaping means comprises three clamps attached at intervals along a length of said second section of said suction pipe, each of said clamps having an eyelet suitable to receive an elongate member, wherein each said clamp is rotated through at least 90° relative to a preceding adjacent clamp so that the eyelets lie in a helical path, said elongate member being held attached to the length of the pipe at opposite ends thereof.

5,082,029

LOOM ARRANGEMENT FOR FABRICS SENSITIVE TO WEAVING STOP MARKS

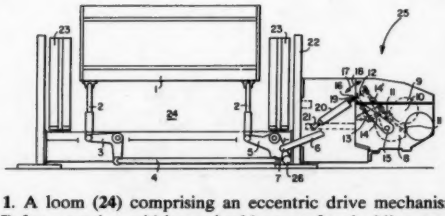
Peter Dornier, Lindau, Fed. Rep. of Germany, assignor to Lindauer Dornier Gesellschaft mbH, Lindau, Fed. Rep. of Germany

Filed Oct. 5, 1990, Ser. No. 593,105

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1989, 3933616

Int. Cl.[5] D03C *5/00, 13/00*

U.S. Cl. 139—1 E 3 Claims



1. A loom (**24**) comprising an eccentric drive mechanism (**25**) for operating said loom, heald means for shedding warp threads, said drive mechanism including rotating cam drive means and connecting elements including a roller lever (**8**) with cam follower rollers (**11**) normally in contact with said rotating cam drive means (**9**), a disengagement lever (**14**) fixed

rigidly against rotation to said respective roller lever (8) for controlling an engagement of said rollers (11) with said cam drive means (9), automatic driving means (19, 20) connected to said disengagement lever (14) and responsive to a loom stoppage for rotating said disengaging lever (14) to disengage said cam follower rollers from said cam drive means and for moving all heald means (1) into a central shed position for removing the stress or stretch from said warp threads when said loom is stopped which occurs when the healds are in an open shed position.

5,082,030

PNEUMATIC THREADING-IN TUBES FOR REPAIRING WARP YARN BREAKS IN A WEAVING MACHINE

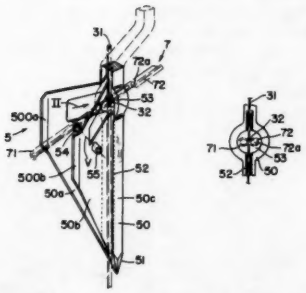
Robert Bucher, Frick, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Sep. 27, 1990, Ser. No. 589,071

Claims priority, application Switzerland, Oct. 3, 1989, 03595/89

Int. Cl.[5] D03D *49/00*

U.S. Cl. 139—35 **16 Claims**



1. An apparatus for repairing warp yarn breaks in a weaving comprising

a pair of elongated tubes for mounting in a weaving machine over a plurality of warp yarns, each said tube having a suction opening for drawing in an end of a fresh warp yarn, a blowing opening for ejecting the end of a fresh yarn therethrough and a slot extending between said openings to permit movement of a fresh warp yarn laterally out of said respective tube; and

means for moving said tubes in parallel to each other to position said blowing opening of one tube opposite a suction opening of the other tube to thread the fresh warp yarn through an opening of a yarn guiding part located between said tubes.

5,082,031

FLEXIBLE CABLE INTERMEDIATE SUPPORT FOR A HEDDLE FRAME

Robert N. Suhr, 431 Chowning Pl., Marietta, Ga. 30064

Continuation-in-part of Ser. No. 558,230, Jul. 26, 1990. This application Aug. 27, 1991, Ser. No. 750,414

Int. Cl.[5] D03C *9/06*

U.S. Cl. 139—91 **11 Claims**

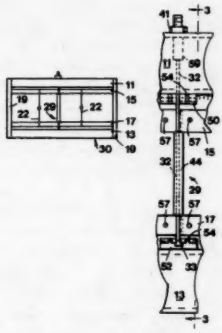
1. In a weaving heddle frame having upper and lower heddle carrying rods affixed to upper and lower frame staves, respectively, the combination with said heddle carrying rods of an intermediate support having:

(a) a flexible member connected to the upper frame stave;

(b) a rigid hollow member surrounding a portion of the flexible member and extending generally from the upper edge of the lower heddle carrying rod to the lower edge of the upper heddle carrying rod;

(c) means for detachably mounting the lower end of the flexible member on the lower frame stave; and

(d) means disposed at the upper end of the flexible member for tensioning the flexible member, the tensioning means transmitting tensile force in the flexible member to urge the lower frame stave upward and to bring the lower heddle carrying rod affixed thereto into contact with the lower end of the hollow member and to urge the upper frame stave downward and to bring the upper heddle



carrying rod into contact with the upper end of the hollow member while the rigid hollow member exerts compressive force simultaneously upon the upper and lower heddle carrying rods to hold them in a spaced apart relationship.

5,082,032

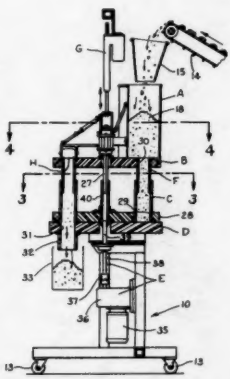
VOLUMETRIC PACKAGING APPARATUS FOR FROZEN FOOD AND METHOD

James F. Crocker, Jefferson, Ga., assignor to George W. Massey, Starr, S.C., a part interest

Continuation of Ser. No. 418,142, Oct. 6, 1989, abandoned. This application Oct. 1, 1990, Ser. No. 595,685

Int. Cl.[5] B65B *1/20*

U.S. Cl. 141—1 **8 Claims**



1. The method of packaging a predetermined volume of loose frozen food comprising the steps of:

feeding frozen food into a stationary hopper;

placing a rotatable and vertically movable first plate having a plurality of circumferentially spaced openings therein below and in register with the hopper;

providing below said first plate a rotatable and vertically fixed assembly plate carrying a plurality equal to the number of said first plate openings of circumferentially spaced vertical hollow cylindrical members each capable of receiving a range of volumes within chosen parameters

of frozen food below and in register with said openings in the first plate, said cylindrical members including telescoping members carried by said first plate and received therein for vertical sliding movement for varying the volume of frozen food which respective cylinders are capable of receiving;

providing power operated means for raising and lowering said first plate relative to said assembly plate thereby controlling the vertical sliding movement of said telescoping members, said power operated means including a vertical member attached to said assembly plate slidably receiving a shaft attached to and extending below said first plate and further including a linear actuator;

vertically moving said first plate with the power operated means to achieve a selected volume within said cylindrical members;

sequentially introducing said frozen food through the spaced openings into said cylindrical members;

providing a second stationary plate below the cylindrical members having an opening therein sequentially registering with the cylindrical members; and

rotating the first plate, the assembly plate, and the cylindrical members as a unit.

5,082,033

DEVICE FOR FILLING CONTAINERS SUCH AS BOTTLES IN COUNTERPRESSURE FILLING MACHINES

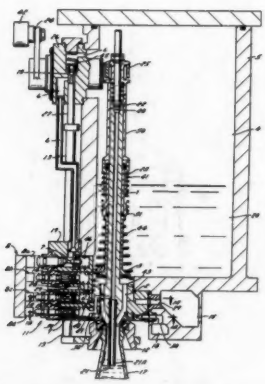
Wilhelm Weiss, Lappersdorf, Fed. Rep. of Germany, assignor to Krones AG Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany

Division of Ser. No. 380,153, Jul. 14, 1989, Pat. No. 4,989,650. This application Oct. 15, 1990, Ser. No. 597,887

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1988, 3825093

Int. Cl.[5] B67C *3/06*

U.S. Cl. 141—39 **5 Claims**



1. Bottle filling apparatus comprising:

a tank for containing the liquid for filling the bottle and a pressurized gas over the liquid,

a filling device having a gas delivery and return tube for delivering gas from said tank to a bottle which is coupled to said device to be filled and for returning the as from the bottle to said tank when the gas is displaced by said liquid being admitted to the bottle, said tube having a lower end for extending into said bottle to establish the level to which said bottle is filled with liquid,

a valve in said gas delivery and return tube and means for controlling said valve to open for delivering said gas to said bottle and to close when the bottle is filled to said level such that any liquid draining into the bottle after closure is excess,

said filling device having a liquid supply valve and a liquid passageway controlled by said supply valve to conduct liquid from said tank to said bottle when said supply valve opens concurrently with the pressure in said tank becoming equal to the gas pressure in said bottle.

a chamber having an internal gas pressure which is lower than the pressure in said tank,

a conduit having an inlet in communication with the gas in said tank and an outlet in communication with said liquid passageway and there is a duct between said passageway and said chamber having the lower gas pressure,

a fill level correction valve in said conduit and means for controlling said correction valve to open momentarily after said liquid supply valve is closed to allow conduction of gas from said tank to the liquid passageway and bottle for the gas to propel said excess of liquid through said duct to said chamber.

5,082,034

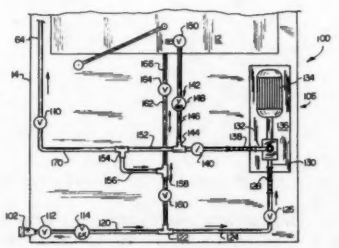
SECONDARY CONTAINMENT DISPENSING TANK

Gerald E. Soper, Greensboro, N.C., assignor to Four Seasons Industrial Services, Inc., Greensboro, N.C.

Filed Jul. 3, 1990, Ser. No. 547,989

Int. Cl.[5] B67D *5/44*

U.S. Cl. 141—88 **14 Claims**



1. An above-ground secondary containment and dispensing system for a primary tank holding a fluid comprising:

a) a dike surrounding said primary tank;

b) a loading platform adjacent to said dike adapted for permitting an operator to dispense said fluid from said primary tank to a fluid receiving vehicle; and

c) a fluid handling system located in a portion of said dike adjacent to said primary tank and having pump means for off-loading said fluid into said primary tank and dispensing said fluid stored in said primary tank, wherein spills from either said primary tank or said fluid handling system are contained with said dike,

wherein said fluid handling system located in a portion of said dike adjacent to said primary tank and having pump means for off-loading said fluid into said primary tank and dispensing said fluid stored in said primary tank includes: i) a fluid inlet located in one wall of said secondary containment dike and connected to said pump means; ii) a first fluid outlet connected to said primary tank for permitting said primary tank to be filled; iii) a second fluid outlet connected to said dispensing system for permitting fluid to be dispensed; and iv) means operable to selected between said first and second fluid outlets, whereby said pump means is operable to selectively fill said primary tank and dispense said fluid, wherein said means operable to select between said first and second fluid outlet includes a first tee between said fluid inlet and the inlet of said pump means, a second tee between the outlet of said pump means and said fluid outlet, and a third tee between said first tee and said second tee and wherein said means operable to selected between said first and second fluid outlet further includes a first valve between said first tee and said third tee and a second valve between said second tee and said fluid output, each of

said first and second valves being movable between a first open position and a second closed position, wherein when said first and second valves are closed said pump means fills said primary tank and when said first and second valves are open said pump means dispenses said fluid.

5,082,035

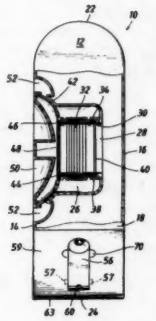
OIL COLLECTING AND DISPENSING APPARATUS

Boyce A. Maxwell, 10527 Kirkvale Dr., Houston, Tex. 77089

Continuation of Ser. No. 464,425, Jan. 12, 1990, abandoned. This application Jan. 29, 1991, Ser. No. 649,235

Int. Cl.[5] F16N *31/00*

U.S. Cl. 141—98 **10 Claims**



1. An apparatus for collecting oil from a vehicle comprising:

a container having a generally rectangular shape, the walls of said container forming first and second sides, a top, and a bottom, and having a recess formed in the first side thereof with an opening therethrough leading into the container;

a telescoping snorkel having opposite ends with one end mounted to the opening formed in the first side of said container;

a funnel forming an inlet opening mounted on the other end of said snorkel;

a cap for closing the inlet opening formed by said funnel, said funnel being selectively positionable in a first, stored position in which said cap, said funnel and said snorkel are positioned down in the recess in the first side of said container within the external confines of said container for facilitating the positioning of said container under a vehicle when said container rests on the second side thereof and a second position in which said snorkel is extended for supporting said funnel in a position in close approximation with the location from which oil is to be collected for draining the oil from the vehicle into said funnel and down through said snorkel into said container; and

a drain spout having a valve therein for selectively dispensing the oil collected in said container when said container is stood upright on the bottom thereof.

5,082,036

FOREST HARVESTER

Pentti Vierikko, Myllykylä, Finland, assignor to Oy Erco-Mek AB, Solf, Finland

PCT No. PCT/FI89/00120, § 371 Date Dec. 17, 1990, § 102(e) Date Dec. 17, 1990, PCT Pub. No. WO89/12383, PCT Pub. Date Dec. 28, 1989

PCT Filed Jun. 20, 1989, Ser. No. 623,791

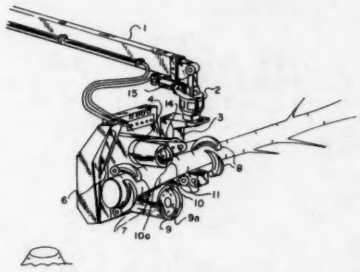
Claims priority, application Finland, Jun. 22, 1988, 882995

Int. Cl.[5] A01G *23/08*

U.S. Cl. 144—3 D **13 Claims**

1. A forest harvester for felling of a tree trunk and for trimming and cutting-off of the tree trunk in a horizontal position, said forest harvester being suspended pivotally at the end of a crane jib and rotatable around a shaft of suspension, and comprising:

a suspension arm shaped substantially as an inverted L and a processor unit mounted pivotally around a pivot shaft at a lower end of said suspension arm, said pivot shaft being directed towards the processor unit, said processor unit having a front side facing away from the suspension arm and being provided with a cross-cutting member, two



groups of trimming members placed at a distance from one another on said processor unit, at least two drive rolls jointly operative with each other, with variable mutual spacing, and mounted between said groups of trimming members, a felling movement of the processor unit arranged about said pivot shaft of the processor unit such that the drive rolls maintain their substantially horizontal position.

5,082,037

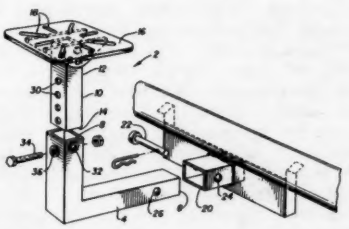
TOOL SUPPORT ASSEMBLY

James L. Hammons, and William H. Lane, both of Bend, Oreg., assignors to Telandco, Inc., Tarzana, Calif.

Filed Apr. 4, 1991, Ser. No. 680,430

Int. Cl.[5] B25H *1/00*

U.S. Cl. 144—286 A **12 Claims**



10. An apparatus for mounting tools and other devices comprising:

an L-shaped first support section having a pair of ends;

a mating means at each end of the L-shaped first support section;

a second support section having a pair of ends;

a second mounting means at one end of the second support section and a second mating means at the other end;

a third support section having a pair of ends;

a third mounting means at one end of the third support section and a third mating means at the other end;

the mating means at each end of L-shaped first support section slideably engaging the second and third mating means respectively; the mating means of the L-shaped section and the second and third mating means having alignable apertures for receiving a releasable locking pin to fix the second and third mating means to the mating means of the L-shaped support section;

a mounting plate tiltably attached to the second mounting

means of second support section, the mounting plate having a plurality of apertures for receiving mounting bolts and the like for fixing tools to the mounting plate;

the third mounting means adapted to releaseably engage a box receiver so that the third support section is securely supported;

whereby the second support section is adjustable in the vertical direction and the third support section is adjustable in the horizontal direction.

5,082,038

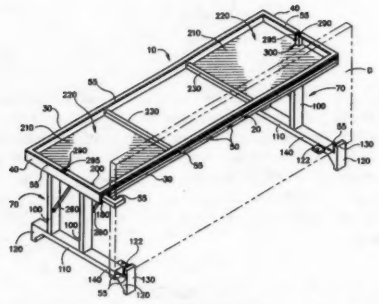
DOOR FABRICATION STATION

Jeff A. Teel, 1851-B West Vista Way, Suite 315, Vista, Calif.

Filed Dec. 11, 1990, Ser. No. 625,964

Int. Cl.[5] B25H *1/00*

U.S. Cl. 144—286 A **12 Claims**



1. A door fabrication station for sawing, planing, routering and mounting hardware on a door, comprising:

an upper door support frame for supporting a door in a substantially horizontal position, said support frame including a pair of longitudinal frame members and a pair of transverse frame members arranged to form substantially a parallelogram, said frame members having a top, a bottom and an intermediate section extending between said top and bottom portions, one of said longitudinal frame members having a pair of recesses formed in the bottom thereof and further having a slot at one end thereof extending transversely therethrough, both of said transverse frame members having a slot extending vertically therethrough, and one of said transverse frame members having a transversely extending channel aligned with said transverse slot in said one of said longitudinal frame members;

a pair of tool support plates mounted to said frame members at said intermediate section thereof, said plates extending from a respective transverse frame member toward the other transverse frame member a distance sufficient to provide an area for storing tools, fasteners or other materials;

a pair of leg assemblies pivotally mounted to said longitudinal frame members adjacent said transverse support members and below said plate members, said leg assemblies including a lower transverse member terminating at a pair of support legs, said transverse members including a lower door support surface between and adjacent one of said support legs for supporting a door in a generally vertical position;

an upper door support member having a stem portion slideably mounted in said transverse slot in said one of said longitudinal frame members and in said transverse channel in said one of said transverse frame members, said upper door support member further having an arm extending from one end of said stem portion to engage one side of a door supported on said lower door support surface, said upper door support member being slideably adjustable to support another side of said door against said one of said longitudinal door support frames;

a threaded fastener extending in said transverse channel and engaging said upper door support member in a selected position of adjustment in accordance with the thickness of a door being generally vertically supported;

a pair of trim stock supports, said trim stock supports including a stem portion slideably mounted in said vertically extending channels in said transverse door support frames, and a transverse portion adapted to support an article to be sawed between said trim stock supports;

a threaded fastener extending in said vertically extending channels and engaging said stem portion of said trim stock supports in a selected position of vertical adjustment in accordance with the height at which a work piece must be positioned for sawing; and

an upper saw support table removably and slideably mounted on the top of said longitudinal frame members for supporting a miter or chop saw for sawing a work piece.

5,082,039

ANTI-SKID CHAIN FOR VEHICLE TIRES

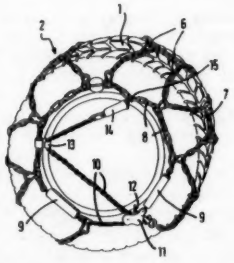
Charles R. Franklin, Fusine Valromana, Italy, assignor to Acciaierie Weissenfels S.p.A., Valromana, Italy

Filed Apr. 27, 1989, Ser. No. 344,223

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1989, 3906486

Int. Cl.[5] B60C *27/10*; A43C *11/00*

U.S. Cl. 152—241 **30 Claims**



1. An anti-skid chain for a vehicle tire which allows for rapid and simplified mounting on a tire while the vehicle bearing the tire is in place, comprising:

a first side harness having a harness line extending between two ends, said harness line is a non-interrupted and a non-interruptable line,

at least one elastic expansion member being provided in the harness line, at least one of the expansion members acting as a damper,

locking means being connected to one end of the first side harness line

a tensioning chain for tensioning the first side harness line, the tensioning chain being connected to the other end of said first side harness line, and passing through the locking means for closing said harness line,

a releasable locking element mounted in the locking means for releasably locking the tensioning chain in the locking means in a direction opposite to a direction in which a tensioning force is applied to the tensioning chain for tensioning said harness line,

stop means provided in the tensioning chain to prevent disengagement of the tensioning chain from the locking means, said stop means comprising a stop member provided on the free end of said tensioning chain, the stop member comprising an elastically expandable tightening member having a securing element at an end thereof for hooking onto said first side harness, said tightening mem-

ber acting as a damping element and having dimensions to prevent it from being pulled through the locking device,

a second side harness comprising an open ring-shaped resilient stirrup having two free ends biased towards each other to a closed position, the stirrup, being elastically openable to an open position with the free ends spaced apart to slip over the tire tread,

closure members mounted on the respective ends of the stirrup, the closure members being lockable together by bringing the ends of the stirrup towards each other to the closed position, and

chain line sections connected to the first and second side harnesses to, in use, extend over the tire tread so that when the chain is mounted on a tire which is on a vehicle, said first side harness line is on an outer side of the tire and said second side harness is on an inner side of the tire.

5,082,040

VEHICLE WHEEL FOR A PNEUMATIC TIRE

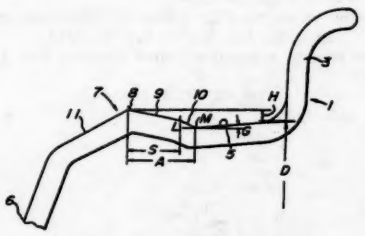
Wolfgang Spitz, Hannover, Fed. Rep. of Germany, assignor to Continental Aktiengesellschaft, Hannover, Fed. Rep. of Germany

Filed Sep. 21, 1990, Ser. No. 586,531

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1989, 3931675

Int. Cl.[5] B60C *17/04*; B60B *21/02*

U.S. Cl. 152—379.3 **9 Claims**



1. In a vehicle wheel for a pneumatic tire of elastomeric material, where the bead portions of the tire are disposed on the radially inner periphery of the wheel rim, and the carcass of the tire is anchored in said bead portions thereof by being looped around pull- and compression-resistant bead cores, and where the wheel has a rigid rim having essentially inwardly extending rim flanges and, axially inwardly thereof, rim seating surfaces for said bead portions of said tires, the improvement wherein:

each of said rim flanges has an abutment surface that faces one of said bead portions of said tire, with said abutment surfaces being inclined outwardly at an angle of between 5° and 50° relative to a radial direction; and

said rim seating surfaces for said bead portions of said tire are inclined relative to an axial direction in such a way that said rim seating surfaces have their greatest diameter at said rim flanges, which are disposed axially outwardly of said rim seating surfaces, with the angle of inclination of said rim seating surfaces being between 10 and 40°.

5,082,041

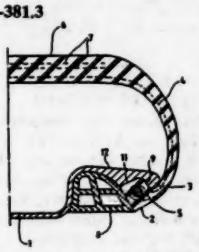
TIRE WHEEL

Shinji Shiozawa, Fussa, and Masato Hodate, Higashiyamato, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Feb. 26, 1991, Ser. No. 660,820

Int. Cl.[5] B60B *21/02*

U.S. Cl. 152—381.3 **7 Claims**



1. A tire wheel including a pair of flanges provided at both axial ends, respectively, a pair of bead seats axially inwardly extending from the flanges, a well provided between the bead seats and concaved radially inwardly of the bead seats, and a hump provided between the well and at least one of the bead seats, wherein said hump has two seat side frustoconical surfaces having different inclined angles relative to a straight line in parallel with a rotating axis of a tire to be mounted on the tire wheel, and the inclined angle of one of the frustoconical surfaces on the side of the relevant bead seat is larger than the inclined angle of the other frustoconical surface on the side of the crest of the hump.

5,082,042

BELT ARRANGEMENT FOR HIGH DURABLE PNEUMATIC RADIAL TIRE

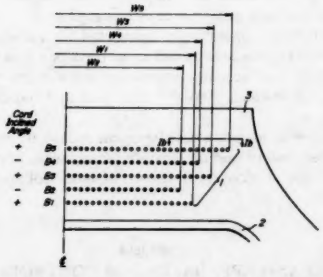
Yasuhiko Kobayashi, Hachioji; Hiroyuki Koseki, Kodaira, and Yumi Kawame, Sayama, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 284,367, Dec. 14, 1988, abandoned. This application Sep. 10, 1990, Ser. No. 581,153

Claims priority, application Japan, Dec. 15, 1987, 62-315190

Int. Cl.[5] B60C *9/28*

U.S. Cl. 152—535 **6 Claims**



1. A high durability pneumatic radial tire comprising; a tread; a radial carcass; at least four reinforcing belts, each of said belts having a cord layer with cords arranged in parallel with each other and coated with rubber, said cord layers being laminated about a crown region of said radial carcass with the cords intersecting with each other over a crown circumference to reinforce said tread, all of said cord layers divided into two groups by positive and negative signs respectively of projections of the cords of the respective cord layers onto an imaginary coordinate plane including a rotating axis of the tire with cords of said cord layers in one group crossing with cords of the cord layers of said other group and cord layers of one group alternate with cord layers of the other group, the cord

layers in each of the groups being progressively wider as said cord layer of a group is arranged radially outward and, a maximum width of the cord layers of the one group being less than a maximum width of the cord layers of the other group, thereby reducing shearing strains caused by a load acting upon the tire in rubbers between said cord layers near to side ends of the cord layers in contact with a tread rubber on the reinforcing belts.

5,082,043

WINDOW SHADE MECHANISM FOR A MODULAR AIRCRAFT WINDOW

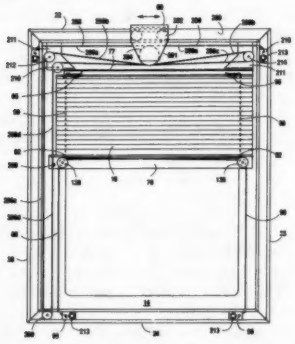
Gilbert C. Moreno, San Antonio, Tex., assignor to MSA Aircraft Interior Products, Inc., San Antonio, Tex.

Continuation-in-part of Ser. No. 415,016, Jul. 29, 1991, Pat. No. 4,998,576, and a continuation-in-part of Ser. No. 667,019, Mar. 8, 1991. This application May 28, 1991, Ser. No. 706,214

The portion of the term of this patent subsequent to Mar. 12, 2008, has been disclaimed.

Int. Cl.[5] E06B *3/32*

U.S. Cl. 160—90 **11 Claims**



1. A device for raising and lowering a shade of a modular aircraft window between an open and closed position, the window comprising an inner pane, an outer pane, frame assembly securing said inner pane and said outer pane in space, generally parallel relation, collapsible shade means with a fixed end and a movable end, the device comprising:

actuator means operatively connected to said shade means for moving said shade between the open and the closed position, said actuator means having a throw that is less than the distance between the open and the closed position; and

an alignment means, said alignment means to maintain the moving end of said collapsible shade means perpendicular with the direction of travel of said collapsible shade means.

5,082,044

METHOD AND APPARATUS FOR CONTROLLING THE COMPOSITION OF A MOLTEN METAL BATH

Henning J. Christensen, Reading, Mich., assignor to Hickman, Williams & Company, Cincinnati, Ohio

Filed Aug. 4, 1989, Ser. No. 389,631

Int. Cl.[5] B22D *46/00*

U.S. Cl. 164—4.1 **18 Claims**

1. A method of controlling the composition of a molten metal bath of various metallic elements for providing a consistent molten metal product comprising:

sampling the molten metal bath at a furnace as it passes from the furnace directly to a ladle;

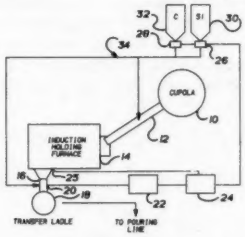
analyzing the elements present in a sample from said molten metal bath;

determining the amount of the elements present in said sample;

comparing the amount of elements present in said sample with a predetermined desirable amount of elements to be present in said product;

adding, if necessary, elements to said molten metal bath either at the furnace; adding, if necessary, elements into said molten metal bath at the ladle;

adjusting, if necessary, the composition of the molten metal bath;



repeating the above steps until the amount of the elements in the sample are within a desired tolerance of the predetermined desired amount of elements to be present in the final product, whereby addition of elements into the molten bath would terminate until the samples fall outside of said tolerance wherein said elements would be added to said bath and said steps repeated and wherein the molten metal in the ladle is poured into castings.

5,082,045

CASTING APPARATUS AND METHOD

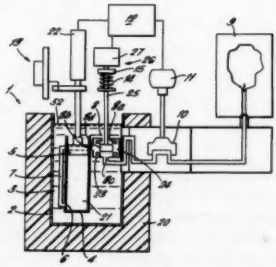
Derek Lambert, Rhu, United Kingdom, assignor to Fry's Metals Ltd., London, United Kingdom

Continuation of Ser. No. 472,962, Jan. 31, 1990, abandoned. This application Jun. 4, 1991, Ser. No. 711,130

Claims priority, application United Kingdom, Feb. 1, 1989, 8902120

Int. Cl.[5] B22D *17/04*

U.S. Cl. 164—113 **8 Claims**



1. Casting apparatus comprising a dispenser defining a dispensing chamber of variable volume receiving molten metal in use, a valve having a housing defining a valve chamber and a passageway communicating between the valve chamber and the dispensing chamber, the valve further defining an inlet port communicating with a supply of molten metal and further defining an outlet port communicating with a die, a valve member located in the valve chamber, actuating means selectively operable to move the valve member into a first position closing the inlet port and a second position closing the outlet port whereby in the first position the valve connects the dispensing chamber with the die for casting metal and in the second position the valve connects the dispensing chamber with the supply of molten metal for recharging the dispensing

chamber, the valve including first and second profiled annular seats surrounding the inlet and outlet ports respectively and engageable by respective first and second profiled annular sealing surfaces of the valve member in the first and second positions respectively, the profiles of said first and second annular seats and said first and second annular sealing surfaces enabling substantial line contact to occur between said seats and said sealing surfaces, and wherein the actuating means comprises a stem fixed to the valve member, a linear actuator operable to provide reciprocating axial movement of the stem, the valve member being of greater diameter than the respective seats such that contact between the first and second sealing surfaces and the respective seats defines axial limits of travel of the stem and rotating means operable during axial movement of the stem to rotate the stem so as to vary the relative contact position of each seat and the respective sealing surface, said rotating means comprising means deriving rotational movement of the stem directly from linear movement of the stem whereby the rotating means is inoperable during seating contact between the sealing surfaces and the respective seats wherein the rotating means comprises a collar rotatably mounted on the stem, means rotating the collar in a first direction during axial movement of the stem in a first direction and in a reverse direction of rotation during axial movement of the stem in a reverse direction and ratchet means operable between the collar and the stem to transmit rotational movement to the stem in one direction only.

8. A method of casting by means of casting apparatus comprising a dispenser defining a dispensing chamber of variable volume receiving molten metal in use, a valve having a housing defining a valve chamber and a passageway communicating between the valve chamber and the dispensing chamber, the valve further defining an inlet port communicating with a supply of molten metal and further defining an outlet port communicating with a die, a valve member located in the valve chamber, actuating means selectively operable to move the valve member into a first position closing the inlet port and a second position closing the outlet port whereby in the first position the valve connects the dispensing chamber with the die for casting metal and in the second position the valve connects the dispensing chamber with the supply of molten metal for recharging the dispensing chamber, the valve including first and second annular seats surrounding the inlet and outlet ports respectively and engageable by respective first and second annular sealing surfaces of the valve member in the first and second positions respectively and wherein the actuating means comprises a stem fixed to the valve member, a linear actuator operable to provide reciprocating axial movement of the stem and rotating means operable to rotate the stem wherein the rotating means comprises a collar rotatably mounted on the stem, means rotating the collar in a first direction during axial movement of the stem in a first direction and in reverse direction of rotation during axial movement of the stem in a reverse direction and ratchet means operable between the collar and the stem to transmit rotational movement to the stem in one direction only, the method including the step of rotating the valve member relative to the valve housing only during axial movement of the valve member in at least one direction of axial movement by said ratchet means so as to vary the relative contact position of the respective seat and sealing surfaces.

5,082,046

DEVICE FOR CASTING THIN STRIPS OF METAL BETWEEN

Philippe Blin, Plappeville, France, assignor to Usinor Sacilor, Puteaux, France

Filed Nov. 29, 1990, Ser. No. 619,764
Claims priority, application France, Dec. 20, 1989, 89 16915
Int. Cl.[5] B22D *11/06*
U.S. Cl. 164—428 **7 Claims**

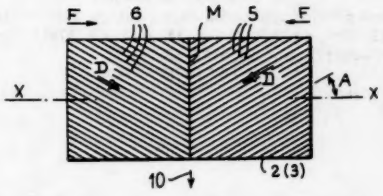
1. A device for casting a thin metal strip comprising:

at least one roll rotatable about an axis, said at least one roll having a surface;

means for supplying molten metal to said surface of said at least one roll when a thin metal strip is to be cast;

said at least one roll further including:

a plurality of nested, spaced apart, V-shaped chevron-like grooves in said surface of said at least one roll;



each V-shaped chevron-like groove having first and second arm portions defining an angle therebetween; and

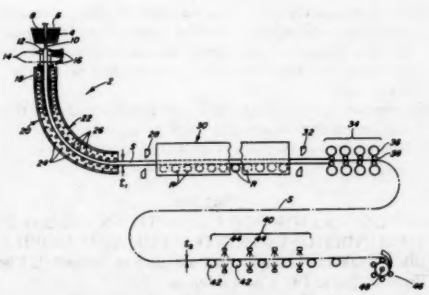
each of said first and second arm portions of each of said substantially V-shaped chevron-like grooves extending away from said angle formed therebetween in a first direction which is opposite to a second direction in which said thin metal strip is to be cast.

5,082,047

METHOD OF CONTINUOUSLY CASTING AND ROLLING METALLIC STRIP

Francis H. Bricmont, McMurray, Pa., assignor to Bricmanage, Inc., Pa.

Division of Ser. No. 387,141, Jul. 31, 1989, Pat. No. 4,991,276.
This application Dec. 3, 1990, Ser. No. 621,638
Int. Cl.[5] B21B *1/46*; B22D *11/12*
U.S. Cl. 164—476 **2 Claims**



1. A compact casting and rolling process for producing strip-like metallic workpieces, said process comprising:

continuously casting a strip-like metallic workpiece to a thickness substantially approximating 1.5 to 2.5 inches;

conveying the workpiece through a furnace by using a plurality of flexible driven roller means, each of said roller means deflecting to a catenary configuration when supporting the weight of the workpiece;

simultaneously with conveying the workpiece through the furnace also centering and guiding the workpiece through said furnace using outer surfaces of the plurality of roller means so deflected to said catenary configuration under the weight of said workpiece;

rolling the workpiece to a thickness substantially approximating 0.1 to 0.6 inches thickness using a single rolling mill train; and

cooling and coiling the rolled workpiece.

5,082,048

HYDROGEN ENGINE SYSTEM WITH METAL HYDRIDE CONTAINER

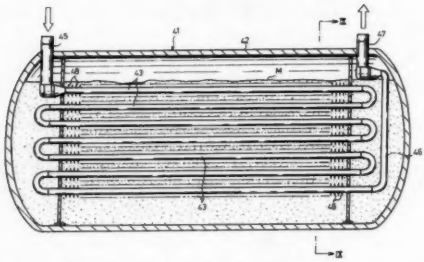
Takashi Iwaki, Okazaki; Kazunori Itou, Ohbu; Hiroshi Matsumoto, Toyota; Hiroyuki Suzuki, Kitakyushu; Juzo Shibata, Aichi, and Nobuyuki Uematsu, Hoya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya and Nippon Steel Corporation, Tokyo, both of, Japan

Division of Ser. No. 384,302, Jul. 24, 1989. This application Dec. 12, 1990, Ser. No. 626,684

Claims priority, application Japan, Jul. 26, 1988, 63-184535; Sep. 22, 1988, 63-237852; Sep. 22, 1988, 63-237857; Nov. 21, 1988, 63-294172; Nov. 21, 1988, 63-294173

Int. Cl.[5] F17C *11/00*

U.S. Cl. 165—1 **4 Claims**



1. A metal hydride container comprising:

a tank for storing hydrogen, the tank when supported in working position having an upper side and a lower side;

a plurality of pipes extending horizontally in said tank for conveying a heat exchange medium, the pipes being arranged successively from said upper side to said lower side;

metal hydride powder disposed in said tank substantially entirely covering said pipes, said metal hydride powder generating hydrogen when heated by said heat exchange medium;

delivery means for delivering said heat exchange medium to said pipes successively from the uppermost of said pipes to the lowermost of said pipes to provide heat-exchange between said heat exchange medium and said metal hydride; and

an empty space located in said tank at the upper side thereof for permitting said metal hydride to expand when said heat exchange medium is delivered to said pipes.

5,082,049

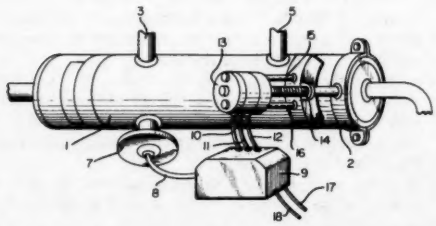
HEAT GENERATOR FOR USE WITH AN ABSORPTION AIRCONDITIONING SYSTEM FOR AUTOMOBILES

Frank F. Nekola, Trenton, Fla., assignor to Robert R. Pisano, Franklin Park, Ill., a part interest

Filed Nov. 13, 1990, Ser. No. 612,254

Int. Cl.[5] F25B *27/02, 15/00;* **F28F** *13/00, 27/00*

U.S. Cl. 165—32 **4 Claims**



1. A heat generating and heat transferring apparatus utilizing waste heat from a motor vehicle catalytic converter comprising:

a heat generator comprising a main tank holding heat transfer fluid and having inlet and outlet connections for said heat transfer fluid;

fluid lines connected to said inlet and outlet connections transferring fluid to and from a coil associated with an apparatus which requires heat;

means for controlling the temperature of said heat transfer fluid comprising a reversible electric motor mounted to said heat generator and connected to a threaded shaft projecting into a mechanical mounting means attached to said vehicle catalytic converter and thermostatic means for sensing the temperature of said heat transfer fluid and selectively activating said electric motor in a forward or reverse direction responsive to said fluid temperature and wherein said heat generator is selectively lowered into proximity and raised out of proximity with said catalytic converter.

5,082,050

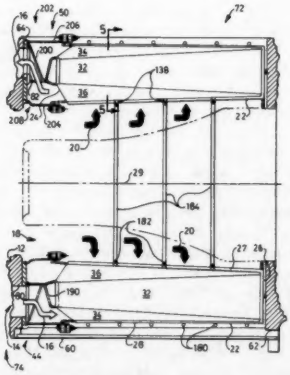
THERMAL RESTRAINT SYSTEM FOR A CIRCULAR HEAT EXCHANGER

Charles T. Darragh, San Diego, Calif., assignor to Solar Turbines Incorporated, San Diego, Calif.

Filed May 29, 1990, Ser. No. 530,955

Int. Cl.[5] F28F *3/00*

U.S. Cl. 165—81 **41 Claims**



29. A heat exchanger, comprising:

a core being made of many pieces and having a plurality of first and second passages adapted to receive fluids of different temperatures, said core further having a generally circular configuration and including an outer portion, said fluids exerting different pressures on said heat exchanger pieces; and

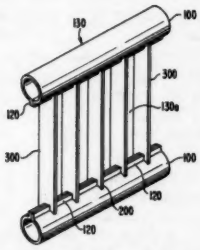
means for expanding and contracting in response to the temperature of only one of the fluids, and maintaining a preestablished force on said heat exchanger pieces, and means for expanding and contraction including at least a portion of said means being positioned externally around the outer portion of the core and the entire means being totally in heat transferring relationship with one of the fluids.

5,082,051

HEAT EXCHANGER HAVING A CORROSION PREVENTION MEANS

Nobuyasu Ando, Takasaki, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Mar. 8, 1990, Ser. No. 490,758
Claims priority, application Japan, Mar. 8, 1989, 1-25508[U]
Int. Cl.[5] F28B *1/06;* B21D *53/08*
U.S. Cl. 165—110 **25 Claims**



12. In a heat exchanger, a header pipe comprising:

a rectangular plate member bent into a tubular shape to form said header pipe;

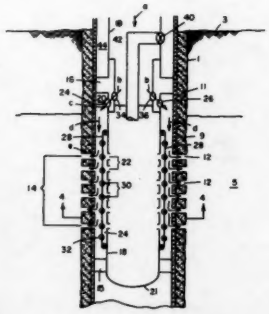
said rectangular plate member having opposite parallel sides with slits cut therein and joint portions, whereupon when said rectangular plate member is bent into a tubular shape said slits align to form slots and said joint portions are attached and extend outwardly from the outer circumference of said tubular shape to form an extensible joint.

5,082,052

APPARATUS FOR GRAVEL PACKING WELLS

Lloyd G. Jones, Dallas; Charles S. Yeh, Plano, and Christopher V. Chow, Dallas, all of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jan. 31, 1991, Ser. No. 648,061
Int. Cl.[5] E21B *43/04*
U.S. Cl. 166—51 **11 Claims**



1. Apparatus for gravel packing a well that penetrates a subterranean oil or gas reservoir, comprising:

(a) a sand screen positioned in said well in juxtaposition with said reservoir, an annulus being formed in said well surrounding said sand screen,

(b) at least one conduit positioned in said annulus in juxtaposition with said sand screen and having passageways at selected intervals along said conduit to permit fluid communication between said conduit and said annulus,

c) means for injecting a fluid slurry containing gravel down through said annulus whereby the fluid portion of said slurry is forced out of said annulus into said reservoir and the gravel portion of said slurry forms a gravel pack in said annulus surrounding said sand screen, and

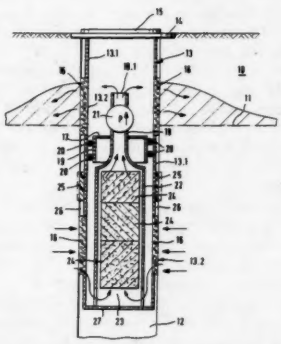
d) actuatable means associated with said passageways in said conduit for controlling fluid flow between said conduit and said annulus through said passageways such that if the gravel portion of said slurry forms a bridge in a portion of said annulus adjacent said conduit, thereby blocking the flow of said slurry through said annulus, said slurry will flow from said annulus into said conduit through one or more of said passageways in said conduit above said bridge, downward through said conduit, and out through one or more of said passageways in said conduit into said annulus below said bridge to continue the forming of a gravel pack within said annulus below said bridge.

5,082,053

ARRANGEMENT FOR CLEANING CONTAMINATED GROUND WATER

Bruno Bernhardt, Reutlingen, Fed. Rep. of Germany, assignor to IEG Industrie-Engineering GmbH, Betzingen, Fed. Rep. of Germany

Filed Sep. 13, 1990, Ser. No. 581,748
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1989, 3931012; Oct. 6, 1989, 3933426
Int. Cl.[5] E21B *43/02*
U.S. Cl. 166—115 **12 Claims**



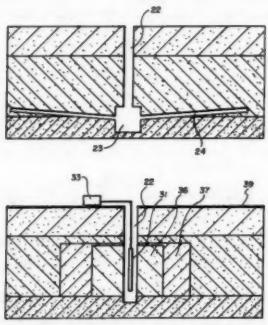
1. An arrangement for cleaning contaminated ground water and the ground through which it passes with a well shaft extending to the region of the ground water to be cleaned, comprising a shaft wall including a plurality of water permeable and water impermeable wall portions with one of said water impermeable wall portions located between two water permeable wall portions; a tightly inserted partition located below a ground water level in said one water impermeable wall portion and having an opening, said water impermeable wall portion in which said partition is located being located between an upper on of said water permeable wall portions, which is at least partially located above the ground water level on the one hand and a lower one of said water permeable wall portions which is located below the ground water lever, means forming a throughgoing passage extending in said opening and forming a part of a flow path which includes a fluid fiow passage from one side of the partition through one of the permeable wall portions, the ground surrounding the well shaft and the other of the permeable wall portions to the other side of the partition; a circulating pump arranged for circulating the ground water along the flow path; and a filter for purifying the ground water arranged in the well shaft in the flow path of the ground water circulated by the circulating pump.

5,082,054

IN-SITU TUNED MICROWAVE OIL EXTRACTION PROCESS

Anoosh I. Kiamanesh, 5603 Yalta Pl., Vancouver, Canada

Filed Aug. 22, 1990, Ser. No. 571,770
Claims priority, application Canada, Feb. 12, 1990, 2009782
Int. Cl.[5] E21B *43/24, 49/00*
U.S. Cl. 166—248 **25 Claims**



23. An in-situ method for partially refining and extracting petroleum from a petroleum bearing reservoir by irradiation of the reservoir with electromagnetic energy of high frequency of mainly microwave region, comprising:

(a) ascertaining geophysical data and water content of the petroleum bearing reservoir;

(b) taking at least one core sample of the reservoir;

(c) testing the core sample to determine the respective amounts of constituent hydrocarbons in the petroleum, the molecular resonance frequencies of the respective constituent hydrocarbons, and the change in properties and responses of the respective constituent hydrocarbons to various frequencies, intensities, durations and wave forms of electromagnetic field energy applied to the hydrocarbons;

(d) developing a strategy for the application of electromagnetic energy to a selected constituent hydrocarbon or group of constituent hydrocarbons in the reservoir based on the results of the core sample tests and the geophysical data and water content of the reservoir;

(e) excavating at least one canal or well in the reservoir;

(f) draining water from the reservoir to reduce the dielectric constant of the hydrocarbon in the reservoir thereby increasing the depth of penetration of microwaves which are subsequently directed to the reservoir;

(g) generating electromagnetic waves of mainly microwave frequency range and deploying the electromagnetic waves to he reservoir to irradiate a selected constituent hydrocarbon or a group of constituent hydrocarbons within the reservoir and thereby produce one or more of microwave flooding, plasma torch, molecular cracking and selective heating of the pre-determined hydrocarbon or group of constituent in the reservoir, to increase temperature and reduce viscosity of the selected constituent hydrocarbon or group of constituent hydrocarbons in the reservoir so that they flow into the underground canal or well; and

(h) removing the treated selected constituent hydrocarbon or group of constituent hydrocarbons from the canal or well.

24. An in-situ method for partially refining and extracting petroleum from a petroleum bearing reservoir by irradiation of the reservoir with electromagnetic energy of high frequency of mainly microwave region, comprising:

(a) ascertaining geophysical data and water content of the petroleum bearing reservoir;

(b) taking at least one core sample of the reservoir;

(c) testing the core sample to determine the respective amounts of constituent hydrocarbons in the petroleum, the molecular resonance frequencies of the respective constituent hydrocarbons, and the change in properties and response of the respective constituent hydrocarbons to various frequencies, intensities, durations and wave forms of electromagnetic field energy applied to the hydrocarbons;

(d) developing a strategy for the application of electromagnetic energy to a selected constituent hydrocarbon or group of constituent hydrocarbons in the reservoir based on the results of the core sample tests and the geophysical data and water content of the reservoir;

(e) excavating at least one canal or well in the reservoir for draining water from the reservoir and collecting hydrocarbons from the reservoir

(f) covering an area above the reservoir with microwave reflective foil to reflect electromagnetic radiation to the reservoir;

(g) generating electromagnetic waves of mainly microwave frequency range and deploying the electromagnetic waves to the reservoir to irradiate a selected constituent hydrocarbon or a group of constituent hydrocarbons within the reservoir and thereby produce one or more of microwave flooding, plasma torch, molecular cracking and selective heating of the selected constituent hydrocarbon or group of constituent hydrocarbons in the reservoir, to increase temperature and reduce viscosity of the selected constituent hydrocarbon or group of constituent hydrocarbons in the reservoir so that they flow into the underground canal or well; and

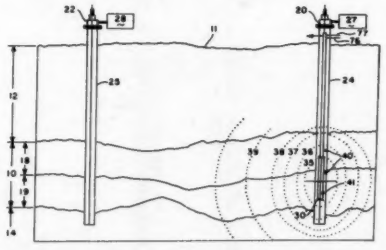
(h) removing the treated selected constituent hydrocarbon or group of constituent hydrocarbons from the canal or well.

5,082,055

GAS FIRED RADIANT TUBE HEATER

Klaus H. Hemsath, Toledo, Ohio, assignor to Indugas, Inc., Toledo, Ohio

Division of Ser. No. 469,173, Jan. 24, 1990, Pat. No. 5,020,596.
This application Jan. 2, 1991, Ser. No. 636,777
Int. Cl.[5] E21B *43/24*
U.S. Cl. 166—272 **7 Claims**



1. A fuel fired radiant tube burner comprising:

i) a first generally cylindrical heat tube;

ii) a second cylindrical heat transfer tube concentrically disposed within said heat tube and defining a longitudinally-extending annular exhaust gas passageway therebetween;

iii) a third cylindrical burner tube concentrically disposed within said second tube and defining a longitudinally-extending annular heat distribution passageway therebetween;

iv) burner means within said third tube at one axial end of said third tube and sealed with respect thereto for igniting, combusting and burning a source of fuel and air to form heated products of combustion within said third tube casing;

v) plate means closing said first, second and third tube axial

end openings which are adjacent one another, said plate means effective to cause said products of combustion to enter said heat distribution passageway; and

vi) aperture and opening means associated with said heat distribution passageway for developing a substantially laminar flow of said products of combustion within said heat distribution passageway, said laminar flow establishing a convective heat flux to modify the radiation heat flux produced by said second heat transfer tube is effective to uniformly heat said first cylindrical heat tube substantially along its length adjacent said second tube casing.

5,082,056

IN SITU REVERSIBLE CROSSLINKED POLYMER GEL USED IN HYDROCARBON RECOVERY APPLICATIONS

James E. Tackett, Jr., Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Oct. 16, 1990, Ser. No. 598,293

Int. Cl.[5] E21B *43/22, 33/138*

U.S. Cl. 166—295 **16 Claims**

10. A process for reversing a crosslinked polymer gel comprising:

preparing a crosslinked polymer gel comprising an acrylamide-containing polymer, a crosslinking agent and a degelling agent precursor;

hydrolyzing said precursor to a degelling agent; and

reacting said degelling agent with said gel to reverse said gel.

15. A process for placing a crosslinked polymer gel in a subterranean formation and subsequently reversing the gel in situ, the process comprising the steps of:

preparing a crosslinked polymer gel by combining a crosslinkable polymer, a crosslinking agent and a degelling agent precursor in solution;

injecting said crosslinked polymer gel into a subterranean formation and placing said gel in a desired treatment region of said formation;

hydrolyzing said precursor to a degelling agent in situ; and

complexing said degelling agent with said crosslinking agent to reverse said gel in situ.

5,082,057

SAND CONSOLIDATION TREATMENT FOR A HYDROCARBON PRODUCTION WELL BORE USING AN OVERDISPLACEMENT FLUID

Robert D. Sydansk, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Dec. 14, 1990, Ser. No. 627,689

Int. Cl.[5] E21B *33/138*

U.S. Cl. 166—295 **8 Claims**

1. A process for consolidating sand in a treatment zone of a subterranean hydrocarbon-bearing formation in fluid communication with a well bore comprising:

admixing an acrylamide-containing polymer, a transition metal cation-containing crosslinking agent and an aqueous solvent at the surface to form an aqueous immature flowing gel;

injecting said immature flowing gel into said treatment zone of said formation via said well bore, said immature gel thereby occupying a volume in said treatment zone;

injecting a hydrocarbon overdisplacement fluid substantially immiscible in said aqueous immature flowing gel into said treatment zone to displace a portion of said aqueous immature flowing gel out of said treatment zone, said overdisplacement fluid thereby occupying the fraction of said volume in said treatment zone vacated by said displaced portion of said aqueous immature flowing gel;

shutting in said well bore for a time sufficient for said aqueous immature flowing gel remaining in said treatment zone to mature to a non-flowing gel, thereby consolidating said sand in said treatment zone; and

producing hydrocarbons from said formation through the fraction of said volume occupied by said overdisplacement fluid in said treatment zone into said well bore.

5,082,058

COMPOSITION AND METHOD FOR SLOWLY DISSOLVING SILICEOUS MATERIAL

David J. Blumer, Tulsa, Okla., assignor to Oxy USA Inc., Tulsa, Okla.

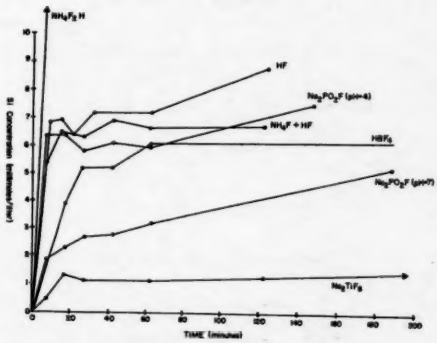
PCT No. PCT/US87/01462, § 371 Date Feb. 22, 1988, § 102(e) Date Feb. 22, 1988, PCT Pub. No. WO88/00278, PCT Pub. Date Jan. 14, 1988

Continuation of Ser. No. 877,973, Jun. 24, 1986, Pat. No. 4,703,803. This PCT application Jun. 18, 1987, Ser. No. 179,951

The portion of the term of this patent subsequent to Nov. 3, 2004, has been disclaimed.

Int. Cl.[5] E21B *43/27*

U.S. Cl. 166—300 **22 Claims**



1. A process for slowly dissolving siliceous material comprising:

(a) providing an aqueous composition comprising water, and a first substance selected from the group consisting of hexafluorotitanate-containing compounds, and mixtures thereof which are operable for producing hydrofluoric acid which is generated by reaction of hexafluorotitanate anions with said water; and

(b) contacting siliceous material with an effective amount of said aqueous composition to slowly dissolve said siliceous material.

20. An acidizing composition comprising water, a first substance selected from the group consisting of hexafluorotitanate-containing compounds, and mixtures thereof which are operable for producing hydrofluoric acid generated by reaction of hexafluorotitanate anions with said water, wherein the concentration of said first substance in said aqueous composition is from about 0.0001 molar to the solubility limit of said first substance in said water, and from about 0.01 to about 1 molar concentration of citrate ion.

5,082,059

USE OF HYDROCARBON-RICH GELS AS FRACTURING FLUIDS

Friedrich Engelhardt, Frankfurt am Main, and Gerlinde Ebert, Dreieich/Offenthal, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 22, 1990, Ser. No. 601,269

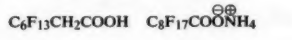
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1989, 3935999

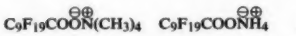
Int. Cl.[5] E21B *43/26*

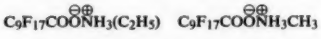
U.S. Cl. 166—308 **5 Claims**

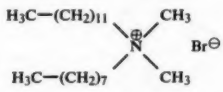
1. Fracturing treatment of a subterranean formation via oil or gas wells comprising injecting fluids containing a hydrocar-

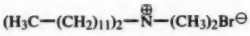
bon-rich gel comprising 50 to 99.5% by weight of hydrocarbon, 0.01 to 15% by weight of surfactant and 0.49 to 35% by weight of water based on the weight of the gel into the wells, wherein the surfactant is selected from the group consisting of

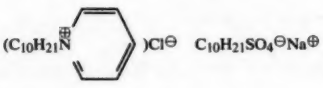


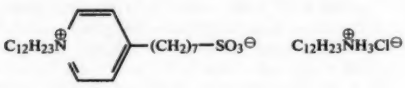


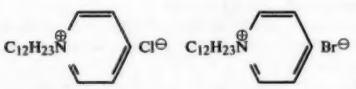


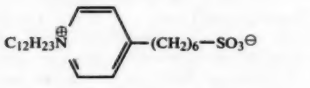


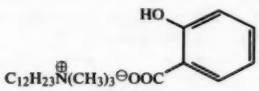


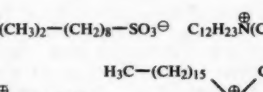


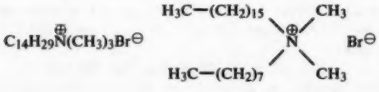


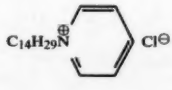












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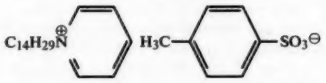
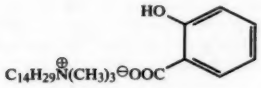
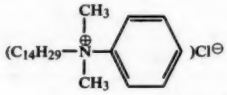
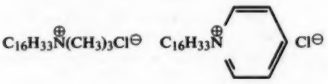
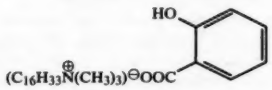
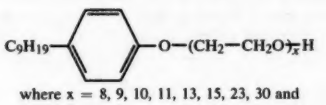




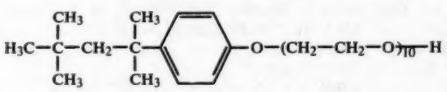








where x = 8, 9, 10, 11, 13, 15, 23, 30 and



5,082,060

SUBSEA WELL HANGER

Johnson, Charles S., London, and Robert Hart, Northolt, both of England, assignors to National-Oilwell (U.K.) Limited, Aberdeen, Scotland

Filed Jan. 16, 1990, Ser. No. 464,809

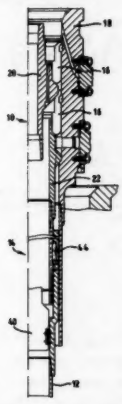
Claims priority, application United Kingdom, Jan. 18, 1989, 8901042

Int. Cl.[5] E21B *33/043*

U.S. Cl. 166—339 **6 Claims**

1. A hanger comprising two tubular sections, one partially received within the other in telescoping relationship, on section having a serrated surface facing the other of said sections, and the other section retaining detent means, said detent means comprising a plurality of segments, each of said segments received in a repsective aperture in said other section and having thread means thereon for cooperatively engaging said

serrated surface to releasably secure said two tubular sections in a desired relative position, said thread means to be moved



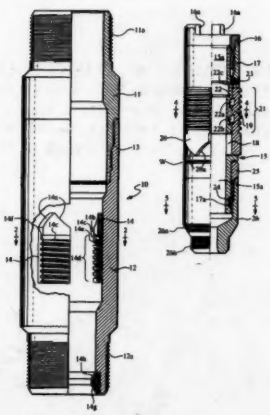
into and out of engagement with said serrated surface, whereby the axial length of said hanger is adjustable.

5,082,061

ROTARY LOCKING SYSTEM WITH METAL SEALS

William W. Dollison, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Jul. 25, 1990, Ser. No. 557,668
Int. Cl.[5] E21B *23/02*
U.S. Cl. 166—378 **15 Claims**



1. A rotary locking system comprising:

(a) a rotary landing nipple connected in a conduit, said landing nipple having a metal seat therein;

(b) rotary lock mandrel means for sealing and releasably locking in said rotary landing nipple, said lock mandrel means having a metal sealing surface sealingly engageable with said landing nipple metal seat; and

(c) rotary running tool means releasably connected to said rotary lock mandrel means for lowering said lock mandrel means into said landing nipple and rotating said lock mandrel means to sealingly engage and lock in said landing nipple, said running tool means automatically releasable from said lock mandrel means on application of a predetermined rotating force by said running tool means on said lock mandrel means.

13. A method of sealably and releasably locking a rotary lock mandrel in a compatible rotary landing nipple with a rotary running tool comprising the steps of:

(a) installing said rotary landing nipple in a well conduit,

(b) lowering said conduit to the desired level in a well;

(c) releasably connecting said rotary lock mandrel to said rotary running tool on the surface, said running tool having a shear pin holding said running tool connected to said lock mandrel;

(d) lowering said connected rotary running tool and said rotary lock mandrel into said well conduit to engage said rotary landing nipple;

(e) further lowering of said lock mandrel into said landing nipple orienting said lock mandrel for sealing and locking rotation in said landing nipple;

(f) applying predetermined downward impact forces to said running tool to rotate said lock mandrel into sealing and locked engagement with said landing nipple and to shear said running tool pin, releasing said running tool from said lock mandrel; and

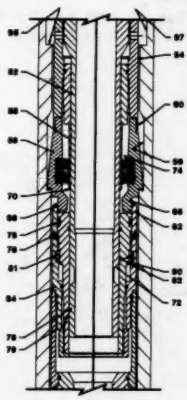
(g) retrieving said running tool back to surface.

5,082,062

HORIZONTAL INFLATABLE TOOL

Edward T. Wood, Kingwood, Tex.; David H. Surgnier, Golden, Colo., and Robert T. Brooks, Aberdeen, Scotland, assignors to CTC Corporation, Houston, Tex.

Filed Sep. 21, 1990, Ser. No. 586,248
Int. Cl.[5] E21B *23/02*
U.S. Cl. 166—382 **12 Claims**



1. A locking and transfer system for use in well tools for shifting and locking co-axially arranged tubular members including:

a tubular central actuating member adapted for coupling to a string of tubing for upward and downward movement by manipulation of the string of tubing;

an outer first tubular member disposed on said central actuating member;

a second tubular member disposed on said central actuating member between said central actuating member and said first tubular member;

said outer first tubular member having inner and outer tubular parts defining an annular recess; said inner tubular part being disposed intermediate of said second tubular member and the central actuating member so that a portion of said second tubular member is slidably disposed in said annular recess;

said inner tubular part having circumferentially arranged recesses and detent members in said recesses which are coupled to longitudinally extending spring members for radial movement relative to said inner tubular part;

said central actuating member having a first annular locking recess for locking said detent members between a wall surface of said second tubular member and said first annular locking recess whereby said central actuating member is releasably interconnected to said inner tubular part of said first tubular member in a first longitudinal position of said central actuating member; and

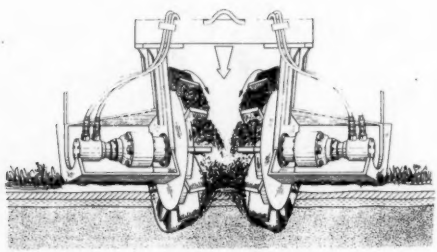
said second tubular member having an annular receiving recess longitudinally spaced from said first annular locking recess in said first longitudinal position of said central actuating member whereby movement of said central actuating member to a second longitudinal position relative to said second tubular member conjunctively moves said inner tubular part and said first tubular member until said detent members are adjacent to said annular receiving recess so that said detent members can be shifted from said first annular locking recess to said annular receiving recess and said central actuating member is released from said first tubular member and whereby further movement of said central actuating member relative to said second tubular member locks the detent members between a wall surface of said central actuating member and said annular receiving recess.

5,082,063

MIXING HEAD FOR SOIL TILLAGE

Derek Sidders, Prince Albert, Canada, assignor to Her Majesty the Queen in right of Canada as represented by the Minister of Forestry, Edmonton, Canada

Filed Aug. 23, 1990, Ser. No. 570,925
Int. Cl.[5] A01B *33/02*; A01C *5/06*
U.S. Cl. 172—57 **1 Claim**



1. A mixing head for tilling behind a pulling unit, comprising:

a frame adapted to be pivotally connected at its forward end to the pulling unit, for pivoting about a substantially horizontal axis;

a pair of laterally spaced apart, substantially vertical, opposed discs rotatably mounted on the frame, said discs being acutely angled, whereby they are further apart at their forward ends than at their rear ends, said discs being generally aligned with the direction of travel;

each disc carrying a plurality of broad, rigid, elongated, chisel-like teeth, projecting substantially perpendicularly and inwardly from the inner face of the disc, said teeth extending generally radially from the central portion of the disc and projecting beyond the disc rim, each disc and its teeth forming a formation;

said formations being laterally spaced apart;

motor and gear means, carried by the frame, for rotating each disc in a direction against the direction of travel; and

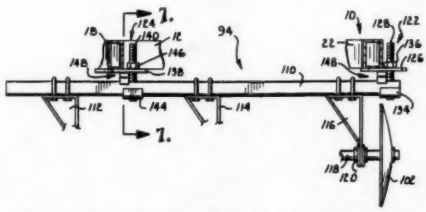
means, carried by the frame, for bearing against the undisturbed soil to the sides of the mixing head and limiting the depth of penetration of the disc and teeth formations.

5,082,064

TILLAGE IMPLEMENT HAVING DEPTH ADJUSTABLE DISCS

Donald R. Landoll, Marysville; Robert D. Harlan, Hanover, and Wayne L. Carroll, Marysville, all of Kans., assignors to Landoll Corporation, Marysville, Kans.

Filed Jan. 24, 1990, Ser. No. 469,177
Int. Cl.[5] A01B *23/00*
U.S. Cl. 172—178 **18 Claims**



14. In a tillage implement having a frame and at least one earth-working tool assembly carried by the frame, said tool assembly including a generally horizontally extending beam and a plurality of earth-working tools mounted on the beam at spaced locations along the latter, the improvement comprising:

means attaching said assembly to the frame for vertical adjustment in a manner to increase or decrease the vertical dimension of a space between the beam and the frame;

rigid spacer structure positionable within the space between the beam and the frame for maintaining the selected adjusted position of the beam below the frame during tillage operations; and

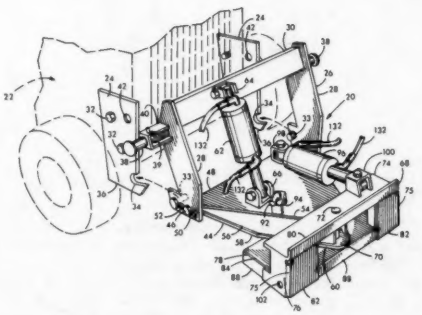
angle adjustment means attaching the beam of said tool assembly to the frame in a manner to permit selective fore-and-aft angular adjustment of the tool assembly relative to the fore-and-aft axis of the frame.

5,082,065

QUICK ATTACH IMPLEMENT COUPLER

Timothy M. Fletcher, Burnett, Wis., assignor to Support Services International, Inc., Beaver Dam, Wis.

Filed Aug. 15, 1990, Ser. No. 567,975
Int. Cl.[5] A01B *59/048*; E02F *3/76*
U.S. Cl. 172—273 **12 Claims**



4. A coupling mechanism for attaching an implement to a vehicle-mounted coupler having an upturned flange and two spaced pinholes beneath the flange, comprising:

(a) a downturned J-shaped bracket having a vertical portion and an opposed portion, the opposed portion being approximately as deep as the upward extension of the flange on the coupler;

(b) vertical plates connected on either side of the J-shaped bracket and adapted to connect the coupling mechanism

to an implement and having portions defining pinholes spaced beneath the J-shaped bracket; and

(c) spring-loaded locking pins located on each vertical plate so that the pins may travel freely in the pinholes, said pins providing means for engaging and being depressed by beveled surfaces of the coupler when the coupler is moved into engagement with the implement coupling mechanism, and to engage within the locking holes of the coupler when the coupler is fully engaged with the implement.

5,082,066

TORQUE IMPULSE DELIVERING POWER TOOL

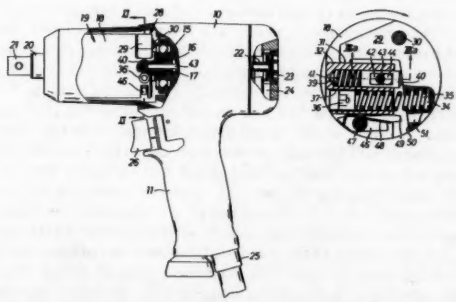
Knut C. Schoeps, Tyresö , Sweden, assignor to Atlas Copco Tools AB, Stockholm, Sweden

Filed Feb. 1, 1991, Ser. No. 649,416

Claims priority, application Sweden, Feb. 5, 1990, 9000389

Int. Cl.[5] B25B *23/14*

U.S. Cl. 173—12 **10 Claims**



1. A torque impulse delivering power tool with an automatic power shut-off means (**23**, **28**), comprising:

a drive unit (**15**) having a rotor (**16**);

power supply means (**24**) coupled to said drive unit (**15**);

power control means (**23**) included in said power supply means (**24**);

an output shaft (**20**);

a hydraulic impulse clutch (**19**) coupling intermittently said drive unit rotor (**16**) to said output shaft (**20**) and comprising a drive member (**18**) drivingly coupled to said drive unit rotor (**16**);

a retardation responsive inertia activated trip means (**28**) associated with said drive member (**18**) for corotation therewith; and

an activation rod (**43**) coupled to said power control means (**23**) and arranged to be endwise supported by said trip means (**28**) at retardation magnitudes in said drive member (**18**) below a certain predetermined level and to be released by said trip means (**28**) for longitudinal displacement and inactivation of said power control means (**23**) at retardation magnitude in said drive member (**18**) above said certain level.

5,082,067

APPARATUS WITH TWO END POSITIONS GENERATING A RECIPROCATING MOTION

Peter J. T. Tornqvist, Barkassvagen 11, S-181 35 Lidingo, Sweden

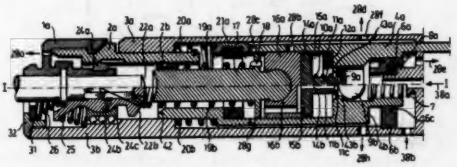
PCT No. PCT/SE89/00072, § 371 Date Sep. 14, 1990, § 102(e) Date Sep. 14, 1990, PCT Pub. No. WO89/07511, PCT Pub. Date Aug. 24, 1989

PCT Filed Feb. 22, 1989, Ser. No. 555,418

Claims priority, application Sweden, Feb. 22, 1988, 8800608

Int. Cl.[5] B25D *9/04*

U.S. Cl. 173—17 **51 Claims**



1. An apparatus generating a reciprocating motion, and having two limit positions, the apparatus comprising:

a first moving part (**4***a*, **4***b*) and a second moving part (**16***a*, **16***b*);

a pressurized drive medium (**38**), applied between said first and second moving parts (**4***a*, **4***b*; **16***a*, **16***b*) to substantially simultaneously displace said moving parts (**4***a*, **4***b*; **16***a*, **16***b*) in mutually opposite directions;

means for applying a constantly present force to at least said first moving part (**4***a*, **4***b*) to actuate said first moving part (**4***a*, **4***b*), in a forward direction;

a first force accumulator (**20***a*) coupled to said first moving part and which is put under increased resilient force-producing loading responsive to actuation of said first moving part in the forward direction;

said pressurized drive medium (**38**) being applied between said first and second moving parts (**4***a*, **4***b*; **16***a*, **16***b*) such that said second moving part (**16***a*, **16***b*) is disposed, in said forward direction, to put an associated second force accumulator (**19***a*, **19***b*) under increased force-producing loading and to substantially simultaneously put said first force accumulator (**20***a*) under decreased resilient force-producing loading;

said first and second moving parts (**4***a*, **4***b*; **16***a*, **16***b*) being located in a common casing (**3***a*, **3***b*) against which said first and second force accumulators (**20***a*, **20***b*; **19***a*, **19***b*) act at all times so as to always act as force accumulators during all movement of their respective associated first and second parts.

5,082,068

DRILLING MACHINE FOR DRILLING HOLES IN ROCKS

Ron A. Cornell, Hastings, N.Y., assignor to Syracuse Utilities, Inc., Brewerton, N.Y.

Filed Feb. 23, 1990, Ser. No. 491,544

Int. Cl.[5] E21B *7/02*

U.S. Cl. 173—22 **11 Claims**

1. A rock drilling machine for making pole holes comprising:

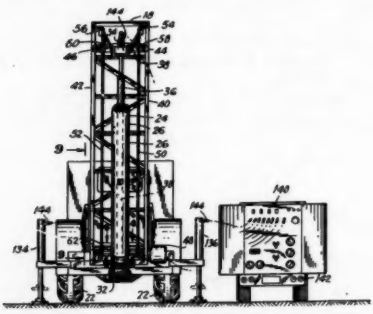
a. a truck with wheels for movement on a terrain, and a truck bed of a desired length;

b. a boom pivotally mounted on said truck bed;

c. a pneumatically operated jack hammer means mounted on said boom and including a hammer head for making a hole in the terrain when said boom is pivoted to a vertical position;

d. boom positioning means for positioning the boom in several or more positions with respect to said truck bed and lateral positioning means for positioning said boom later-

ally with respect to a longitudinal axis along the length of said truck bed; and



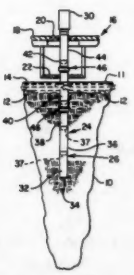
e. wherein said boom positioning means and lateral positioning means allow for the boom to be pivoted and maneuvered in a range of positions both vertically and laterally.

5,082,069

COMBINATION DRIVEPIPE/CASING AND INSTALLATION METHOD FOR OFFSHORE WELL

Nancy J. Seiler, Houston; Junius D. Allen, Dallas; James E. Jackson, Pearland, and Samuel C. Lynch, Houston, all of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 1, 1990, Ser. No. 487,484
Int. Cl.[5] E21B *7/20*
U.S. Cl. 175—5 **11 Claims**



1. A method for installing a drivepipe/casing string in an offshore well comprising the steps of:

providing a multi-section drivepipe/casing assembly including end to end connected casing sections;

lowering said casing assembly into an earth formation;

connecting driving hammer means to said casing assembly and driving said casing assembly to a predetermined depth;

inserting a drillstring and bit assembly into said casing assembly;

drilling a wellbore portion with said drillstring and bit assembly into said formation below the lower distal end of said casing assembly to a selected depth; and

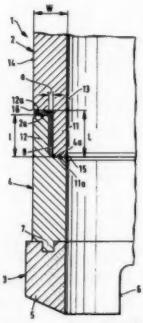
redriving said casing assembly to a further predetermined depth beyond said first predetermined depth.

5,082,070

HOLLOW DRILL BIT

Josef Obermeier, Peiting; Rolf Spangenberg, Gauting, both of Fed. Rep. of Germany, and Theodor Linke, Schaan, Liechtenstein, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Nov. 13, 1990, Ser. No. 612,614
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1989, 3937697
Int. Cl.[5] E21B *17/04*
U.S. Cl. 175—403 **6 Claims**



1. Hollow drill bit **(1)** comprises an axially extending tubular carrier part **(2)**, and annular cutter part **(3)** spaced axially from said carrier part **(2)**, and an annular intermediate part **(4)** extending between said carrier part **(2)** and cutter part **(3)**, said cutter part **(3)** is fixed to said intermediate part **(4)**, said drill bit **(1)** having a drilling direction and each of said carrier part **(2)**, intermediate part **(4)** and cutter part **(3)** has a leading end and a trailing end relative to the drilling direction, said carrier part **(2)** has an axially extending annular first extension **(11)** at the leading end thereof and said intermediate part **(4)** has as axially extending annular second extension **(12)** at the trailing end thereof, one of said first and second extensions **(11,12)** is located radially inwardly of and fits telescopically into the other, said one of said first and second extensions **(11,12)** has an axial length L greater than the axial length **1** of the other, wherein the improvement comprises that said first extension **(11)** on said carrier part **(2)** is spaced radially from said second extension **(12)** on said intermediate part **(4)** by a dimension (a) in the range of 0.02 to 0.15 times the wall thickness (w) of said carrier part **(2)**, and a soldered joint fixes the intermediate part **(4)** to the carrier part **(2)** with the soldered joint extending radially inwardly from an outside surface of said carrier part **(2)** and for the axial lengths of the first and second extensions **(11, 12)**.

5,082,071

METHOD AND APPARATUS FOR MONITORING PAYLOAD

Christos T. Kyrtsos, and Dean A. Worrell, both of Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Aug. 20, 1990, Ser. No. 570,081
Int. Cl.[5] G01G *19/40, 19/08, 19/10*
U.S. Cl. 177—25.14 **14 Claims**

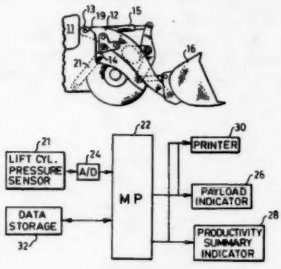
1. A method for dynamically measuring and indicating payload weight for a vehicle having at least one lift cylinder for elevating a payload carrier, said vehicle generally executing a work cycle including lifting said payload carrier, said method comprising the steps of:

sensing hydraulic pressure in said lift cylinder during said work cycle;

delivering a plurality of signals in response to said sensed pressure:

deriving a second order time dependent polynomial representation of said plurality of signals;

comparing said time dependent polynomial to at least one of a plurality of second order geometric polynomial representations of known payload weights; and



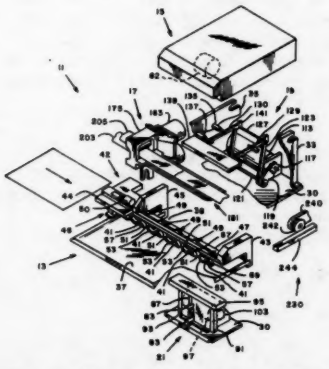
calculating an actual payload weight in response to said comparison.

5,082,072

MODULAR MAILING MACHINE

Donald T. Dolan, Ridgefield; Robert T. Durst, Jr., Monroe; David W. Hubbard, Stamford, and Morton Silverberg, Westport, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 30, 1990, Ser. No. 575,021
Int. Cl.[5] G01G *19/40, 23/38*
U.S. Cl. 177—25.15 **2 Claims**



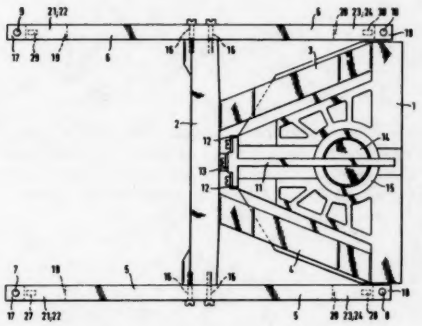
1. A mailing machine comprised of a plurality of modules, each of said modules mounted in said mailing machine to form a single process station having a single registration area for receiving an envelope, wherein said modules include a scale module having means for weighing an envelope on a mail piece support means of said scale module, said mail piece support means forming part of said registration area, a transport module having means for positioning said envelope in said registration area of said process station and ejecting said envelope form said process station, a meter module having printing means for imprinting an indicia on said envelope while said envelope is in said registration area, and a platen module having means for causing said envelope to contact said printing means of said meter module while said envelope is in said registration area, wherein said modules operate in a manner generally functionally independent of any other module, does not interfere with the operation of any other module and said modules can perform their respective function to said envelope while said envelope resides at said process station.

5,082,073

ELECTRONIC BALANCE WITH PARALLEL GUIDE AND SCALE ON TOP

Eberhard Stadler, and Matthias Eger, both of Göttingen, Fed. Rep. of Germany, assignors to Sartorius AG, Göttingen, Fed. Rep. of Germany

Filed Oct. 30, 1990, Ser. No. 605,415
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1989, 3936364
Int. Cl.[5] G01G *7/00, 3/08, 21/24*
U.S. Cl. 177—212 **10 Claims**



1. In an electronic balance with a scale on top, a system carrier (**1**) fixed to the housing, a load receiver (**2**) with two guide rods (**3/4**) which function as parallel guide means connect the load receiver to the system carried in a vertically movable manner with four protruding arms (**5, 6; 40**) which are fastened to the load receiver and carry supports points points (**7, 8, 9, 10; 47, 48**) for a balance scale on their ends and with a low travel measured value receiver (**14, 15**) which is loaded either directly by the force of weight acting on the balance scale or with the interpositioning of a translation lever (**11**), the improvement comprising in that the protruding arms (**5, 6**) comprise a central recess (**19, 20**) in front of their ends (**17, 18**) so that an upper web (**21, 23**) and a lower web (**22, 24**) remain and form a parallel guide for the particular support point (**7, 8, 9, 10**) of the balance scale, each of the four support points (**7, 8, 9, 10**) of the balance scale is associated with a wire strain gauge (**27, 28, 29, 30**) located on one of the associated webs (**21, 23**), said four wire strain gauges (**27, 28, 29, 30**) are arranged in such a manner on the webs (**21, 23**) that they are all stressed or all compressed upon an approximately central loading of the balance scale, said four wire strain gauges (**27, 28, 29, 30**) are electrically wired to two half bridges and the output signals of the two half bridges are added with presettable values to the output signal of the measured value receiver (**14, 15**).

5,082,074

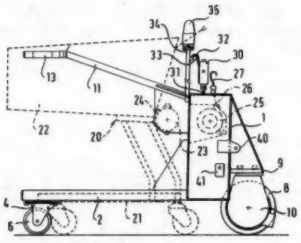
TRANSPORT VEHICLE

Horst Fischer, Oberhausen, Fed. Rep. of Germany, assignor to Lafis Lagertechnik Fischer GmbH & Co KG, Oberhausen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 376,681, Jul. 7, 1989, abandoned. This application Aug. 16, 1990, Ser. No. 568,421
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1988, 3823377
Int. Cl.[5] B62D *5/04*
U.S. Cl. 180—11 **9 Claims**

1. A steerable transport vehicle for wheeled shopping carts with a lower frame to be nested together with similar carts the transport vehicle, comprising a rigid base frame having a U shape as seen in a plan view for embracing the shopping cart, said base frame being disposed at substantially the same height as the lower frame of the shopping cart and having leg members with free rear ends and a transversely oriented front drive

section, brackets each being pivotably mounted at a respective one of said free rear ends, guide wheels each being guided in a respective one of said brackets, a non-pivotable driving wheel, means for fixedly mounting said driving wheel to a central



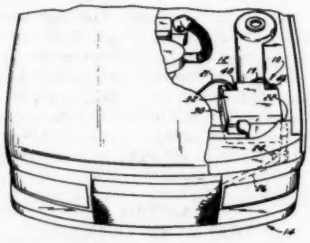
portion of said transversely oriented front drive section, said driving wheel having integrated mobile drive means for driving said wheel, and steering and guiding arms extending over said leg members, said arms being adapted to be grasped by a user for steering said transport vehicle.

5,082,075

METHOD AND APPARATUS FOR THERMAL CONTROL OF AUTOMOTIVE COMPONENTS

Neil C. Karolek, Cudahy; Mark S. Inkmann, Milwaukee; Richard T. Johnson, Hubertus; Jerome A. Kondrakiewicz; Brett M. Lenhardt, both of Milwaukee, and David W. Saari, South Milwaukee, all of Wis., assignors to Globe-Union, Inc., Milwaukee, Wis.

Division of Ser. No. 405,689, Sep. 7, 1989, Pat. No. 5,031,712.
This application May 8, 1991, Ser. No. 697,248
Int. Cl.[5] B60K *11/00*; B60R *16/04*
U.S. Cl. 180—68.2 **8 Claims**



1. In a vehicle having an engine compartment enclosed by a hood, a battery thermal control box adapted to be mounted in the engine compartment, said control box comprising:

a casing having a bottom panel, side walls, and end walls;

a cover for closing the top of said casing;

an air inlet at one of said end walls;

means formed on the surface of the bottom panel for supporting a battery in a spaced relation to said bottom panel, said supporting means forming in combination with the bottom of said battery, air flow paths between the bottom of the battery and the surface of said bottom panel;

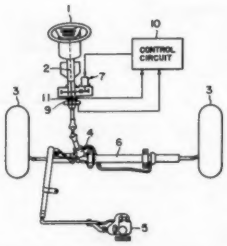
and means for blowing air into said air inlet for circulation through said flow paths across the bottom of the panel and upwardly in the spaces between the side walls and end walls of the battery.

5,082,076

METHOD AND APPARATUS FOR CHECKING TORQUE SENSOR IN ELECTRIC POWER STEERING SYSTEM FOR VEHICLE

Saiichiro Oshita, and Toyohiko Mouri, both of Tokyo, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 324,672, Mar. 17, 1989, Pat. No. 5,020,617.
This application Feb. 11, 1991, Ser. No. 653,367
Claims priority, application Japan, Mar. 25, 1988, 63-71231
Int. Cl.[5] B62D *5/04*
U.S. Cl. 180—79.1 **5 Claims**



1. An apparatus for checking a torque sensor of an electric power steering system having an electric motor provided to generate an assisting power in response to a torque signal generated from the torque sensor, comprises:

detecting means for detecting that the torque signal is substantially equal to zero and for generating a detection signal;

deciding means for deciding that a rate of changing steering angle is larger than a predetermined value and for producing a decision signal;

judging means for judging that the steering angle is increasing and for outputting a judgment signal; and

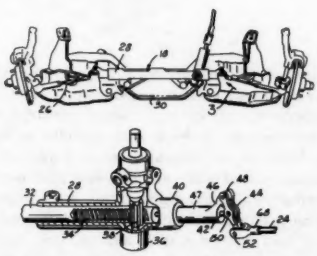
determining means responsive to the detection signal, decision signal and judgment signal for determining an abnormality of the torque sensor.

5,082,077

OFFSET STEERING GEAR ASSEMBLY

Thomas C. Holka, Milford, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 9, 1990, Ser. No. 594,903
Int. Cl.[5] B62D *3/12*
U.S. Cl. 180—79.3 **12 Claims**



1. A steering system for use in a vehicle, comprising:

a pinion gear operatively connected to a steering wheel through a linkage;

an elongate rack member operative to meshingly engage said pinion gear and move reciprocally in response to rotation of said steering wheel;

a rack housing for supporting said rack member for reciprocal movement therein;

a tie rod operatively associated with a road wheel of said vehicle; and

lever means pivotally mounted to said rack housing and directly drivingly engageable with said tie rod to effect reciprocal movement thereof in response to reciprocal movement of said rack member, said lever means comprising an articulated link being pivotally connected to said rack housing, said rack member and said tie rod, and adapted to pivotally interconnect said tie rod to said rack member.

5,082,078

STRUCTURE OF A FRONT BODY OF A MOTOR VEHICLE AND A METHOD OF ASSEMBLING A VEHICLE BODY

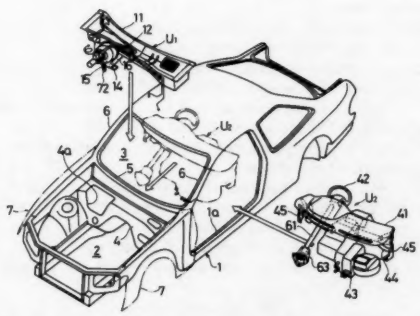
Takashi Umeda; Norihiro Kanemitsu; Kousuke Murakami; Kuniaki Takahara, and Ushio Sakurai, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan

Filed Dec. 21, 1990, Ser. No. 632,769

Claims priority, application Japan, Dec. 21, 1989, 1-333138; Feb. 19, 1990, 2-39220; Mar. 12, 1990, 2-61878

Int. Cl.[5] B60K *37/00*

U.S. Cl. 180—90 **28 Claims**



1. A structure of a front body of a motor vehicle having a passenger compartment with a door opening and an engine compartment separated from said passenger compartment, the structure comprising:

a vehicle body side member of a closed sectional construction extending in the widthwise direction of said vehicle body between right and left front pillars thereof, said body side member being attached to said body to interconnect said front pillars and thereby increase body rigidity around a lower edge of a front windshield of said vehicle;

a first unit provided in the front part of said vehicle body side member, said first unit having at least a cowl member and a windshield wiper system attached to said cowl member, an end part of said first unit being fixed to said vehicle body, said first unit being shaped to be inserted into said body through said engine compartment from above toward said side member;

and a second unit provided in the rear part of said vehicle body side member, said second unit having at least an instrument panel and a steering system, an end part of said second unit being fixed to said vehicle body, said second unit being shaped to be inserted into said body from the rear through said door opening toward said side member.

5,082,079

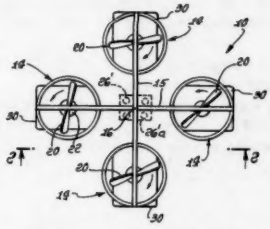
PASSIVELY STABLE HOVERING SYSTEM

Peter B. S. Lissaman, Altadena; Herman M. Drees, Simi Valley; Charles J. Sink, Simi Valley, and William D. Watson, Simi Valley, all of Calif., assignors to Aerovironment, Inc., Monrovia, Calif.

Filed May 4, 1990, Ser. No. 519,015

Int. Cl.[5] B60V *1/11;* **B64C** *29/00*

U.S. Cl. 180—118 **14 Claims**



1. In a passively stable hovering system, the combination comprising:

(a) apparatus defining a principal central axis in hover mode, and including multiple upright ducts spaced about said axis,

(b) multiple fluid momentum generators, at least one in each of said ducts, to effect axial flow of fluid in the ducts,

(c) and fluid flow deflector means extending in flow deflecting relation with said axially flowing fluid, and angled to deflect the fluid flow away from said central axis, in such manner as to provide stability,

(d) said ducts having exit nozzles and said deflector means projecting axially and outwardly from the central axis and below each of said duct exit nozzles.

5,082,080

FRONT AND REAR WHEEL TURNING SYSTEM FOR VEHICLE

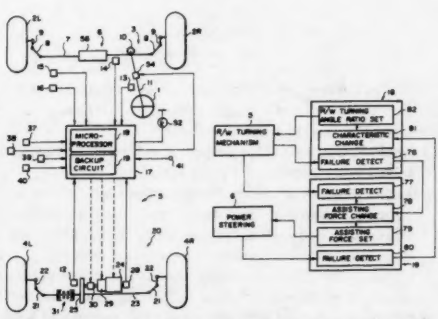
Hirotaka Kanazawa, and Hiroshi Ohmura, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 485,537, Feb. 27, 1990, abandoned. This application Jul. 26, 1991, Ser. No. 735,671

Claims priority, application Japan, Feb. 28, 1989, 1-49433

Int. Cl.[5] B62D *5/04, 7/00*

U.S. Cl. 180—140 **17 Claims**



1. A front and rear wheel turning system for a vehicle comprising a front wheel turning mechanism which turns a front wheel in response to the turning of a steering wheel so that the turning angle of the front wheel is directly proportion to the rotational angle of the steering wheel, a rear wheel turning mechanism with turns a rear wheel in response to the turning of the steering wheel, and a power steering mechanism for

providing an assisting force for assisting the front wheel turning mechanism in turning the front wheel at a turning angle which is directly proportional to the rotational angle of the steering wheel such that the assisting force eases turning of the steering wheel while the directly proportional relationship between the turning angle of the front wheel and the rotational angle of the steering wheel is maintained, a rear wheel turning angle ratio, which is the ratio of the wear wheel turning angle to the front wheel turning angle, being changed on the basis of predetermined rear wheel turning angle ratio characteristic curves, said front and rear wheel turning system further comprising,

a failure detecting means which detects a failure of the rear wheel turning mechanism and

an assisting force changing means which changes the assisting force of the power steering mechanism when the rear wheel turning mechanism fails.

5,082,081

SLIP CONTROL APPARATUS OF A VEHICLE

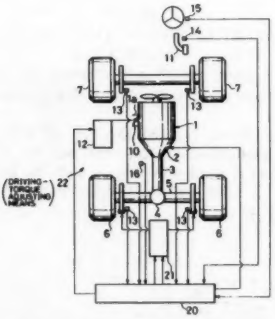
Toshiaki Tsuyama, and Toru Onaka, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 587,550, Sep. 24, 1990, abandoned, which is a continuation of Ser. No. 386,160, Jul. 28, 1989, abandoned. This application Mar. 28, 1991, Ser. No. 679,131

Claims priority, application Japan, Jul. 29, 1988, 63-191343

Int. Cl.[5] B60K *23/00*

U.S. Cl. 180—197 **13 Claims**



1. A slip control apparatus of a vehicle, comprising:

a driving torque adjusting means for adjusting driving torque acting on a driven wheel;

a slip detecting means for detecting a slip value of the driven wheel with respect to a road surface;

a feed-back control means for subjecting said driving torque adjusting means to feed-back control at a set response velocity so as to allow the slip value detected by said slip detecting means to reach a given target value;

a friction coefficient detecting means for continuously detecting a friction coefficient on the road surface; and

a response velocity altering means for increasing said set response velocity in the direction of reducing the driving torque acting upon the driven wheel when the slip value detected by said slip detecting means during the feed-back control by said feed-back control means is equal to or larger than a given value which is larger than said target value, compared with when the slip value is smaller than said set value.

5,082,082

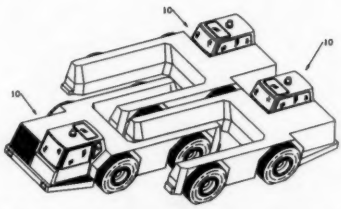
MULTI-PURPOSE SERVICE VEHICLE

Dusan J Hvolka, Salt Lake City, Utah, assignor to DJH Engineering Center, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 359,277, May 31, 1989, which is a continuation-in-part of Ser. No. 140,671, Jan. 4, 1988. This application Aug. 17, 1990, Ser. No. 568,767

Int. Cl.[5] B62D *33/00*

U.S. Cl. 180—234 **16 Claims**



1. A U-shaped multi-purpose vehicle pulling and carrying system comprising: a plurality of multi-purpose vehicles each respectively having:

a. a U-shaped frame supporting and defining the shape of the vehicle, with opposing sides and rear ends connected by a back piece, and front ends defining an open interior space in communication with an open front end of sufficient size to accommodate the respective rear ends of a corresponding U-shaped frame when inserted within the respective interior spaces of a corresponding second multi-purpose vehicle,

b. wheel mounts capable of pivoting attached to the opposing sides,

c. a plurality of wheels independently suspended and rotatably attached to the wheel mounts,

d. pivot means associated with the wheel mounts to pivot and turn each wheel in a desired direction,

e. independent drive means associated with each wheel to rotate said wheels forward and backward,

f. a power source to operate the pivot means and independent drive means, and

g. control means mounted to the frame and associated with the drive means, and pivot means to selectively activate the drive means and pivot means to align and drive each wheel at the desired speed and direction;

with their U-shaped frames interconnected for pulling and carrying articles.

5,082,083

STRUCTURE WALL MOUNTED SPEAKER ASSEMBLY

Gary T. Draffen, Rancho Palos Verdes, Calif., assignor to Culver Electronic Sales, Inc., Gardena, Calif.

Filed Oct. 2, 1990, Ser. No. 591,946

Int. Cl.[5] H05K *5/00*

U.S. Cl. 181—150 **19 Claims**

1. A speaker assembly to be mounted onto a wall, wherein the wall has a front surface and a rear surface, and a first wall opening and a spaced apart second wall opening are created in the wall and a third wall opening is created in the wall to permit a portion of a woofer to extend through the third wall opening, the wall mounted speaker assembly comprising:

a. a frame support member including a generally flat panel having a front surface and a rear surface and including an arcuate upper edge, an arcuate lower edge, and a pair of arcuate sidewalls which dorm four edges of a cavity located immediately behind the rear surface of the generally flat panel;

b. a first speaker opening in said generally flat panel of said frame support member to receive a tweeter whose dimensions permit the tweeter to be contained within said cavity of said frame support member;

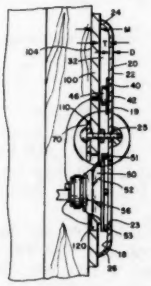
c. a second speaker opening in said generally flat panel of

said frame support member spaced apart from said first speaker opening, and sized to receive a woofer whose dimensions cause a portion of the woofer to extend out of said cavity of said frame support member;

d. a first attaching means opening and a second attaching means opening in said generally flat panel of said frame support member;

e. said first and second attaching means openings and said second speaker opening in said generally flat panel of said frame support member being spaced apart, such that the first wall opening in the wall is aligned with said first attaching means opening in said generally flat panel of said frame support member, the second wall opening in the wall is aligned with said second attaching means opening in said generally flat panel of said frame support member, and the third wall opening in the wall is aligned with said second speaker opening in said generally flat panel of said frame support member;

f. a support plate having a first bolt opening aligned with the first wall opening in the wall and a spaced apart second bolt opening aligned with the second wall opening in the wall, and positioned adjacent the rear surface of the wall;



g. a first threaded bolt extending through the first bolt opening in said support plate, through the first wall opening in the wall and fastened to the wall with a first nut threaded on the first bolt and resting adjacent the front surface of the wall;

h. a second threaded bolt extending through the second bolt opening in said support plate, through the second wall opening in the wall and fastened to the wall with a second nut threaded on the second bolt and resting adjacent the front surface of the wall; and

i. said frame support member mounted in front of the front surface of the wall by extending said first threaded bolt through said first attaching means opening in said generally flat panel of said frame support member and fastening said frame support member with a third nut threaded on said first threaded bolt, and extending said second threaded bolt through said second attaching mean opening in said generally flat panel of said frame support member and fastening said frame support member with a fourth nut threaded on said second threaded bolt, and causing the portion of said woofer which extends out of said cavity of said frame support member to extend through the third wall opening in the wall.

5,082,084

EXTENSIBLE SOUND CASE

Tsao Ye-Ming, Rm. No. 6-11, 6/F., No. 782, Ting Chou Rd., Taipei 107, Taiwan

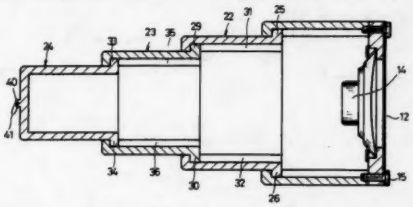
Filed Jul. 23, 1990, Ser. No. 555,839

Int. Cl.[5] H05K *5/00*

U.S. Cl. 181—153 **4 Claims**

1. An extensible sound case comprising:

a speaker mounting board having a central hole therethrough for sound waive transmission; a speaker fixedly secured to said mounting board for broadcasting through the central hole; a porous wire netting member extending across the central hole to overlie said speaker; a hollow tubular sound chest main body fixedly secured to said mounting board in surrounding relation to said speaker; and a plural number of hollow tubular telescopic members slidably telescoped within each other and within said



sound chest main body, whereby said telescopic members can have retracted positions within said main body or extended positions projecting from said main body away from the speaker mounting board; said sound chest main body and said hollow tubular telescopic members cooperatively forming a resonant sound enclosure members are in their extended positions.

5,082,085

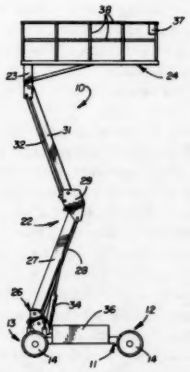
PLATFORM LEVELING APPARATUS

Michael D. Ream, Lafayette, and Gerald L. Claxton, Fresno, both of Calif., assignors to Up-Right, Inc., Oakland, Calif.

Filed Aug. 30, 1990, Ser. No. 575,233

Int. Cl.[5] B66F *11/04*

U.S. Cl. 182—2 **12 Claims**



1. A mobile aerial lift vehicle, comprising:

(a) an elongated chassis having front and rear ends,

(b) two laterally-spaced ground engaging wheels mounted on each end of said chassis,

(c) a pedestal,

(d) means mounting said pedestal on said chassis for pivotal movement of said pedestal about an axis extending generally fore and aft of said chassis,

(e) means for pivoting said pedestal about said axis,

(f) a work platform,

(g) elevating means mounted on said pedestal for raising and lowering said platform and for maintaining the center of gravity of said platform within the base area determined by said wheels during raising and lowering of said platform,

(h) means at one end of said chassis for mounting at least one of said wheels at that end of said chassis for vertical movement relative to said chassis so that all wheels may be engaged with ground that is uneven,

(i) means for releasably locking the wheels at said one end of said chassis against vertical movement relative to said chassis.

5,082,086

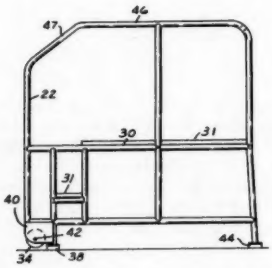
WHEELED LADDER

James F. Kerr, Croswell, Mich., assignor to Material Control, Inc., Croswell, Mich.

Filed Dec. 5, 1990, Ser. No. 622,760

Int. Cl.[5] E06C *1/397*

U.S. Cl. 182—17 **3 Claims**



1. A ladder comprising:

a frame having a first step at a first vertical position and a second step at a second vertical position above said first vertical position;

at least one wheel normally fixed at a third vertical position which is below said first vertical position, but off of the ground;

said first and second steps extend between lateral ends of said frame, and there being two of said wheels, with one positioned at each said lateral end;

legs positioned at least at each lateral end, said legs normally contacting the ground;

a rail positioned on said frame and extending generally vertically near said steps; and

said wheels being positioned longitudinally forwardly of said legs, said wheels rotating about a point fixed on said frame at a position normally vertically off the ground by a distance greater than a radius of said wheels, but less than a diameter of said wheels; and

wherein said vertically extending portion of said rail being positioned longitudinally forwardly of said wheels, and extending downwardly to a vertical position spaced from the ground such that a recess is defined longitudinally rearwardly and vertically beneath said rail, and longitudinally forwardly of said leg, and said wheels are disposed in said recess, said leg being longitudinally aligned with a longitudinally forwardmost portion of said first step.

5,082,087

SHOPPING CART PLACEMENT STRUCTURE WITH STAIRWAY

Jackie Hubbell, 1907 Lawrence, Bentonville, Ark. 72712

Filed Feb. 11, 1991, Ser. No. 653,136

Int. Cl.[5] E04G *27/00*; E06C *5/32*

U.S. Cl. 182—129 **17 Claims**

1. A shopping cart emplacement structure with child's stairway comprising:

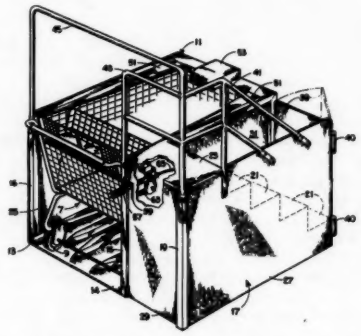
a generally rectangular base adapted to rest on a level floor, said base having an opening at one end to accept shopping cart wheels,

an upstanding frame on at least one side of said base,

at least three steps forming a stairway secured to said frame and leading up to a location above the end of said rectangular base having an opening,

detention means fixedly secured relative to said base for engaging with said shopping cart and having manually operated release means for disengagement thereof,

a self-closing gate at the bottom of said stairway preventing ready access thereto,



a latch for said gate with means for remotely releasing said latch, and

means preventing release of said latch when said structure is not occupied by a shopping cart.

5,082,088

CROSS MEMBER CONSTRUCTION FOR USE AT THE FOOT OF LADDERS

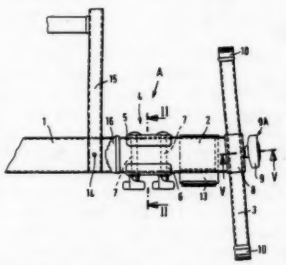
Günther Krause, Alsfeld, Fed. Rep. of Germany, assignor to Krause-Werk GmbH & Co. KG, Alsfeld-Altenburg, Fed. Rep. of Germany

Filed Sep. 26, 1990, Ser. No. 588,593

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1989, 8911543[U]; Mar. 2, 1990, 9002470[U]

Int. Cl.[5] E06C *7/44*

U.S. Cl. 182—204 **16 Claims**



1. A cross member construction for use adjacent the foot of ladders having at least a pair of sidepieces, wherein a cross bar is fastenable to the sidepieces of the ladder, wherein a support element is selectively positionably fastened on at least one end area of the cross bar to laterally extend said support element laterally beyond the end of said cross bar, which support element has an elevationally adjustable support arm thereon.

5,082,089

TRACTION MOTOR SUSPENSION BEARING LUBRICATOR

Richard J. Renk; George E. Boller, and Richard M. Ebert, all of Winona, Minn., assignors to Carol Ann Mackay and Helen Lou Kurtz, both of Winona, Minn.

Filed Nov. 14, 1988, Ser. No. 271,017

Int. Cl.[5] F16N *7/12*

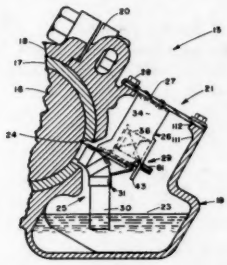
U.S. Cl. 184—64 **47 Claims**

17. A wick assembly for use with a carrier having a support

including a trackway, said carrier also having a portion of a retaining means for securing said wick assembly thereto and also for locating biasing means relative to said carrier for urging said wick assembly along a defined path on said trackway, said wick assembly comprising,

a slide having a rear leg,

a lubricator body carried by said slide for movement along said defined path,



means for positioning said biasing means relative to said wick assembly,

an complementary retaining means carried by said wick assembly adapted to cooperate with said portion of said retaining means of said carrier for securing said wick assembly and carrier together.

5,082,090

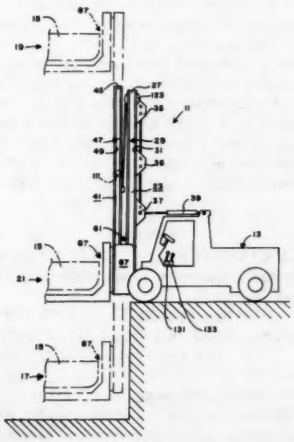
STACKING MAST FOR A LIFT TRUCK

Evo M. Walker, Louisville, Miss., assignor to Taylor Machine Works, Inc., Louisville, Miss.

Continuation-in-part of Ser. No. 535,504, Jun. 11, 1990, abandoned. This application Feb. 25, 1991, Ser. No. 660,686

Int. Cl.[5] B66B *9/20*

U.S. Cl. 187—9 E **27 Claims**



1. A stacking mast for being attached to a lift truck and for moving a load between a negative position and a positive position, said stacking mast comprising:

a) an elongated first mast, said first mast including a lower end for being attached to said lift truck and including an upper end;

b) an elongated second mast, said second mast including a lower end and an upper end;

c) a floating carriage means for securing said second mast to said first mast, said floating carriage means including first securing means for being slidably secured to said first mast and including second securing means for being slidably secured to said second mast;

d) a support carriage slidably attached to said second mast for supporting said load; and

e) lift means for moving said support carriage between a lower position and an upper position on said second mast and for moving said second mast between a lower position and an upper position on said first mast.

5,082,091

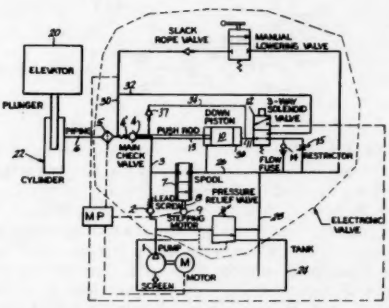
HYDRAULIC ELEVATOR CONTROL

Richard N. Fargo, Plainville, Conn., assignor to Otis Elevator Company

Continuation-in-part of Ser. No. 467,445, Jan. 19, 1990, Pat. No. 5,014,824. This application Sep. 28, 1990, Ser. No. 589,875

Int. Cl.[5] B66B *11/04*

U.S. Cl. 187—17 **3 Claims**



1. An hydraulic elevator system comprising:

an elevator car;

a plunger/cylinder assembly for raising and lowering said elevator car;

a supply of hydraulic fluid and a fluid pump for delivering hydraulic fluid to said plunger/cylinder assembly;

an adjustable metering valve for controlling hydraulic fluid flow to and from said plunger/cylinder assembly;

biased check valve means interposed between said plunger/-cylinder assembly and said metering valve said check valve means normally being closed by a positive fluid pressure differential on the plunger/cylinder side thereof, said check valve means having a plunger/cylinder side communicating with said plunger/cylinder and a metering valve side communicating with said metering valve;

fluid actuated means operable with fluid from said plunger/-cylinder assembly to selectively open said check valve means to allow withdrawal of hydraulic fluid from said plunger/cylinder assembly during a downrun of said elevator car; and

a valve means including a single valve, said valve means interconnecting said plunger/cylinder and said metering valve sides of said check valve means.

5,082,092

CYCLE BRAKE

Kenichi Yoshigai, Osaka, Japan, assignor to Yoshigai Kikai Kinzoku Co. Ltd., Osaka, Japan

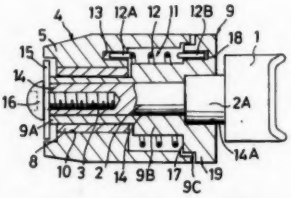
Filed Apr. 20, 1990, Ser. No. 512,181

Int. Cl.[5] B62L *1/14*

U.S. Cl. 188—24.21 **1 Claim**

1. In a cycle brake consisting of a pair of brake arms provided with brake shoes, the distance between which can be freely widened or narrowed, arm mounting plates provided with supporting shafts to support brake arms and attached to a cycle body, return springs to energize brake arms constantly in spreading directions so as to separate the brake shoes from

each other, and spring caps and tightening bolts; a cycle brake wherein a bossed section of at least one of the above brake arms forms a return spring storage recess surrounding the supporting shaft, a return spring being fitted onto the support shaft and stored within said recess, and said recess being directly closed by a respective one of said spring caps which releasably forced by a respective one of said tightening bolts into an axial abutment with an end portion of the supporting shaft which is sufficient to preclude relative rotation therebetween; wherein one end of the return spring is engaged onto the bossed section of each arm and the other end is engaged only in the spring cap; wherein a tool seat is formed by the periphery of the spring cap as a means for effectuating a spring tension adjustment upon relaxing of the force holding the spring cap in axial abutment with the supporting shaft by



rotation of the spring cap relative to the supporting shaft; and wherein said bossed section is axially displaceable relative to said spring cap and supporting shaft when the spring cap is held in abutment with said supporting shaft; wherein the return spring storage recess has an opening at a rear side of the bossed section of the arm; wherein the spring cap has a shaft portion which is mounted onto the supporting shaft and passes from the rear of the bossed section to an end which protrudes at a front side of the bossed section; wherein the bossed section of the brake arm is indirectly mounted onto the supporting shaft so as to be freely rotatable; wherein the supporting shaft protrudes slightly at the front side of the bossed section; and wherein said bossed section is disposed with axial clearance between a washer of said tightening bolt and the periphery of said spring cap for enabling said axial displaceability of the boss section relative to the spring cap and supporting shaft.

5,082,093

HYDRAULIC BICYCLE BRAKE

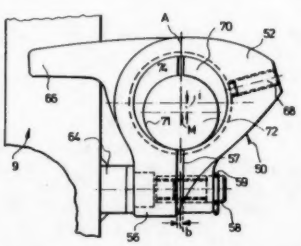
Sandor Sule, Thayngen, Switzerland, assignor to Pellyfren AG, Flurlingen, Switzerland

Filed Dec. 17, 1990, Ser. No. 628,157

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1990, 4029401

Int. Cl.[5] B62L *3/06*

U.S. Cl. 188—24.22 **16 Claims**



1. A hydralic bicycle brake cylinder comprising at least one actuating cylinder, at least one brake cylinder in a cylinder mounting, and a brake element operatively connected to the brake cylinder, the brake cylinder being connected to the actuating cylinder by a fluid line, wherein the fluid line opens into a variable-volume chamber in the brake cylinder and the movement of the brake element is controllable by the variation of volume thereof, wherein the brake cylinder rests in a mounting eye of a rotatable mounting ring which is fixable in a preselectable position and wherein the mounting eye is arranged eccentrically in the mounting ring.

5,082,094

EXPANDABLE CASE

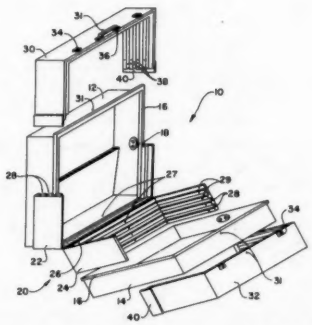
Gabriel Nechushtan, 5 Tchelenov St., Rishon Lezion 75234, Israel

Filed Jun. 12, 1990, Ser. No. 536,781

Claims priority, application Israel, Sep. 4, 1989, 91505

Int. Cl.[5] A45C *7/00, 13/00, 13/02*

U.S. Cl. 190—105 **7 Claims**



2. An expandable case having a volume, the case comprising:

a bottom central portion defining an open side facing edge along at least one side thereof with a plurality of substantially parallel rib receiving tracks parallel to said open side facing edge;

a top central portion defining an open side facing edge along at least one side thereof with a plurality of substantially parallel rib receiving tracks parallel to said open side facing edge and in registration with the tracks of the bottom central portion; and

at least one movable side compartment, an open edge of the movable side compartment defining a peripheral projecting rib dimensioned for slidable engagement in said rib receiving tracks of the top and bottom central portions, wherein said at lest one side compartment is movable with respect to said top and bottom central portions from one rib receiving track to another to obtain a desired volume.

5,082,095

LOCK-UP CLUTCH PRESSURE CONTROL DEVICE

Hiroyuki Imamura, Shizuoka, Japan, assignor to Jatco Corporation, Japan

Filed Sep. 6, 1990, Ser. No. 578,198

Claims priority, application Japan, Sep. 8, 1989, 1-233997

Int. Cl.[5] F16H *45/02*

U.S. Cl. 192—3.3 **10 Claims**

1. A transmission comprising:

an input element in drive connection with a prime mover;

an output element in drive connection with a gear train;

a lock-up clutch operatively arranged between said input element and said output element, said lock-up clutch including an apply chamber in which an apply pressure is supplied and a release chamber into which a release pressure is supplied;

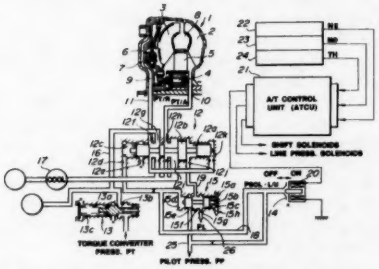
a source of line pressure;

a source of constant level pilot pressure;

a lock-up clutch valve for controlling the supply of apply pressure to said apply chamber and the supply of release pressure to said release chamber, said lock-up clutch control valve including a spool, said spool having a first

effective area against which said release pressure acts and a second effective area which is essentially equal to the first area and against which said apply pressure acts, said first effective area being arranged to produce a bias which acts in a first direction when exposed to said release pressure, said second effective area being arranged to produce a bias which acts in a second direction when exposed to said apply pressure;

a solenoid valve for providing a first variable level control pressure, said solenoid valve selectively reducing the pilot pressure to form said first variable level control pressure; and



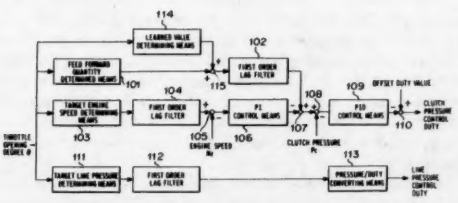
switching valve means, said switching valve means being responsive to the variable level pressure produced by said solenoid valve and arranged to supply a second control pressure to the lock-up clutch control valve, said switching valve being supplied said line pressure and said pilot pressure, said switching valve being arranged to be responsive to said first variable level control pressure in a manner wherein, when said first variable level control pressure is below a predetermined level, said switching valve supplies said pilot pressure to said lock-up control valve as said second control pressure and supplies line pressure to said lock-up control valve when the level of said first variable control pressure reaches said predetermined level.

5,082,096

CONTROL APPARATUS FOR AN AUTOMATIC CLUTCH DEVICE

Yoshinori Yamashita, Shizuoka, and Hiroaki Yamamoto, Himeji, both of Japan, assignors to Mitsubishi Denki K. K., Tokyo and Suzuki Motor Corporation, Shizuoka, both of, Japan

Filed Oct. 4, 1990, Ser. No. 592,738
Claims priority, application Japan, Oct. 5, 1989, 1-260654
Int. Cl.[5] B60K *41/02*
U.S. Cl. 192—0.032 **3 Claims**



1. A control apparatus for an automatic clutch device comprising:

a primary pressure controlling valve for controlling a primary pressure in an oil clutch,

a line pressure controlling valve for controlling a line pressure in the oil clutch,

a clutch pressure controlilng valve for controlling a clutch pressure in the oil clutch,

first, second and third electromagnetic valves for controlling respectively the primary pressure controlling valve, the line pressure controlling valve and the clutch pressure controlling valve,

engine speed sensing means for sensing a speed of said engine, and

a control section which is coupled to and which controls the first, second and third electromagnetic valves,

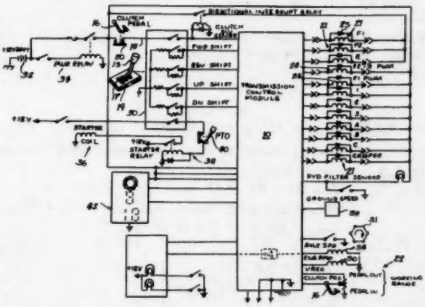
wherein said control section includes means for performing a feed-back control of said engine speed to the third electromagnetic valve, means for learning feed-back quantities of said engine speed, means for modifying a feed-forward quantity, means for storing values representing engine speed obtained by learning feed-back quantities of the engine speed and means for changing a clutch pressure control duty of the third electromagnetic valve by modifying said feed-forward quantity by the last value learned.

5,082,097

TRANSMISSION CONTROLLER

Victor D. Goeckner, Auburn, and Ronald W. Steffen, Springfield, both of Ill., assignors to Dickey-john Corporation, Auburn, Ill.

Continuation-in-part of Ser. No. 446,307, Dec. 5, 1989, abandoned. This application Jan. 26, 1990, Ser. No. 470,753
Int. Cl.[5] F16D *43/20*
U.S. Cl. 192—32 **16 Claims**



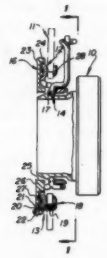
1. A transmission controller for use with a vehicle having a transmission including a plurality of gears, a solenoid valve operated clutch, and a solenoid valve for operating said solenoid valve-operated clutch, said controller comprising: signal generating means for generating a controlled current signal for operating said solenoid valve; current monitoring means for producing a current signal corresponding to the current flow to said solenoid valve; vehicle monitoring means for producing a predetermined threshold signal corresponding to a point at which said clutch begins to carry a predetermined amount of torque; memory means for retaining predetermined information corresponding to said current signals; and correlating means responsive to said threshold signal for causing said memory means to retain calibration information corresponding to the current signal produced when said threshold signal occurs, such that said retained information corresponds to a threshold value of the current to said solenoid valve at which said clutch begins to carry said predetermined amount of torque.

5,082,098

ASSEMBLY FOR COUPLING A LOCATING MEMBER TO A DIAPHRAGM, PARTICULARLY FOR AN AUTOMOTIVE CLUTCH

Christian Gay, Paris, and Philippe Lassiaz, Boulogne, both of France, assignors to Valeo, Paris, France

Filed Jun. 19, 1989, Ser. No. 367,737
Claims priority, application France, Jun. 23, 1988, 88 08439
Int. Cl.[5] F16D *23/14*
U.S. Cl. 192—89 B **3 Claims**



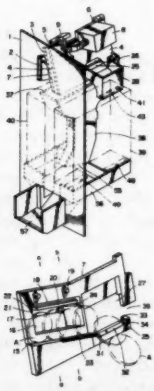
1. An assembly comprising a diaphragm, a locating member, and fastening means for coupling the locating member to the diaphragm, wherein the fastening means comprises a resilient member defining a plurality of generally axially extending tongues, the diaphragm having tongue receiving means and the tongues extending through said tongue receiving means, the assembly further comprising a clutch actuating member, a coupling clip fastening the clutch actuating member and the locating member together by a snap fit, and a retaining plate disposed on the side of the located member opposite to the diaphragm, the locating member and retaining plate together defining between them an axially extending cage, the retaining plate being a separate member from said resilient member, said resilient member being disposed on the side of the diaphragm opposite the locating member and being hooked in the retaining plate by means of said tongues.

5,082,099

APPARATUS FOR ACCEPTING TWO KINDS OF COINS

Hiroshi Abe, Tokyo, Japan, assignor to Asahi Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1990, Ser. No. 511,461
Claims priority, application Japan, Apr. 25, 1989, 1-103378
Int. Cl.[5] G07D *5/02*
U.S. Cl. 194—338 **7 Claims**



1. An apparatus for receiving larger and smaller diameter coins and discriminating them to identify unacceptable coins, larger diameter acceptable coins, and smaller diameter acceptable coins, comprising:

a front plate having upper and lower portions, a coin inlet in said upper portion and a coin returning outlet opening in said lower portion;

a coin diameter discriminating passage unit, a portion of which is adapted for discriminating diameters of coins inserted into said coin inlet and which is operable to form a downward opening for dropping an unacceptable larger or smaller diameter coin from said portion, said unit including an outlet end with two opposed side outlets for discharging acceptable diameter coins,

and a vertically extending coin returning chute arranged below the coin diameter discriminating passage unit for receiving the unacceptable diameter coin dropped therefrom and for delivering the unacceptable coin to the coin returning outlet;

two coin material discriminating units arranged at opposite sides of the coin returning chute, respectively, one of the two opposed side outlets introducing the larger acceptable coins received from said coin diameter discriminating passage unit into one of the coin material discriminating units and the other of the two opposed side outlets introducing the smaller acceptable coin into the other of said coin material discriminating units; and

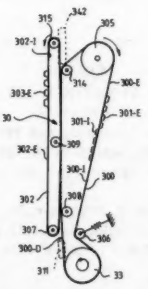
said front plate, coin diameter discriminating passage unit, coin returning chute and two coin material discriminating units being integrally connected.

5,082,100

DEVICE FOR PROCESSING COINS

Patrick Guyonneau, Viroflay, France, assignor to Electronique Serge Dassault, Saint-Cloud, France

Filed Jul. 11, 1989, Ser. No. 378,255
Claims priority, application France, Jul. 15, 1988, 88 09639
Int. Cl.[5] G07F *1/00*
U.S. Cl. 194—343 **15 Claims**



1. A device for processing coins, comprising a housing having a front face provided with an admission slot for coins and a coin return receptacle, the housing having in its interior, a module for processing the coins, means for routing the coins from the admission slot to the entry of the processing module and coin return means connecting the outlet from the processing module to the return receptacle, wherein the routing means comprise in a shaft communicating by gravity with the return receptacle:

a conveyor equipped with at least a first belt having notches on at least a first face thereof, the conveyor having a lower end, and the first belt having a lower part which forms the lower end of the conveyor,

a gravity coin admission passage having an admission inlet opposite the admission slot and terminating in a flank adjacent the notched face of the lower part of the first belt,

distancing means for periodically distancing the lower part of the first belt from the flank and,

transfer means situated at the top of the conveyor and adapted for transferring the coins from the conveyor to the inlet to the processing module.

5,082,101

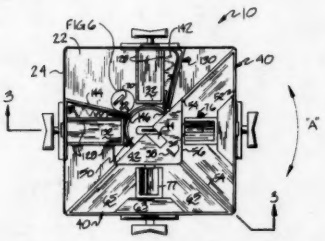
COIN OPERATED VENDING MACHINE

David W. Baker, 8772 Tavernor Rd., Wilton, Calif. 95693, and Joe K. Caradine, 9167 Falcon Ridge Ln., Fair Oaks, Calif. 95628

Filed May 24, 1989, Ser. No. 356,187

Int. Cl.[5] G07F *13/02*

U.S. Cl. 194—350 **11 Claims**



1. A vending machine comprising, in combination:

an open top housing,

a plurality of modules configured to removeably reside within said housing,

each said module having circumscribing sidewalls, said module further having a hopper and gate mechanism fastened to lower portions of said circumscribing sidewalls and defining a lower enclosure, said module thereby defining an open top container which allows a module to be removed from said housing without disturbing contents contained within said module because said gate mechanism is removed along with said module,

a plurality of coin operated mechanisms coupled to said housing such that one said coin mechanism is provided for operative association with each said module,

means between said gate of each said module and said associated coin operated mechanism to open said gate for dispensing some of the contents of said associated module upon actuation of said coin operated mechanism,

a lid which is placed on top of and occludes said modules, and includes lock means extending to said housing to prevent unauthorized removal of said lid,

said module sidewalls extend above said hopper and gate mechanism and said sidewalls are formed from transparent material so that a potential vendee can examine the contents within each said module, and said transparent material has a height which elevates said lid above said housing,

said lock means includes a bail extending between said lid and said housing along a central vertical core area of said machine and said bail is surrounded by said plurality of modules whereby said bail is protected from access by unauthorized personnel,

said housing includes a bottom wall and upwardly extending sidewalls and said plurality of hoppers of said modules collectively circumscribe an inner periphery of said sidewalls of said housing by nesting within said housing,

said modules further including feet means below said gate which allows said module to be freestanding on a support surface when removed from said machine to facilitate upright orientation of said module apart from said machine,

said housing includes plural discharge chutes within said housing with one said discharge chute in underlying registry with one each of said gates of said plural modules when said modules are deployed in said machine, and said feet means are also formed to perch upon said discharge chute.

5,082,102

ESCALATOR SAFETY APPARATUS

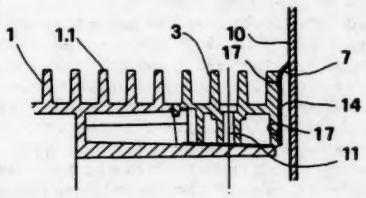
Hugo Reichmuth, Lucerne, Switzerland, assignor to Inventio AG, Switzerland

Filed Mar. 7, 1990, Ser. No. 489,692

Claims priority, application Switzerland, Mar. 9, 1989, 00887/89

Int. Cl.[5] B66B *23/12*

U.S. Cl. 198—333 **11 Claims**



1. A safety apparatus for eliminating the gap between a tread surface and a riser of a movable step and stationary pedestal plates positioned along both sides of a treadable stair belt of an escalator comprising: a lip formed from an elastic synthetic material, said lip being adapted to slidingly abut a pedestal plate and cover a lateral gap between a tread surface and a riser of an escalator step and the pedestal plate, said lip being connected to an insert section adapted to be removably attached to side edges of the step and wherein said lip is formed on a synthetic material support, said support being attached to a side surface of said insert section by ultrasonic welding.

5,082,103

COMPUTER CONTROLLED LIGHT CONTACT FEEDER EMPLOYING FOUR INDEPENDENTLY DRIVEN CONVEYORS

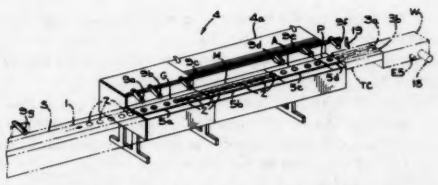
Jeffrey L. Ross, Pulaski, and James W. Krueger, Green Bay, both of Wis., assignors to FMC Corporation, Chicago, Ill.

Filed Nov. 20, 1987, Ser. No. 123,620

The portion of the term of this patent subsequent to Aug. 1, 2006, has been disclaimed.

Int. Cl.[5] B65G *47/26*

U.S. Cl. 198—460 **15 Claims**



1. A light contact feeder for receiving randomly spaced articles from a supply conveyor, lightly abutting the articles and delivering a single article or a plurality of articles to a flighted conveyor at a speed and at a spacing to match flights on the flighted conveyor, said feeder comprising:

first, second, third and fourth feeder conveyors;

means for mounting said first feeder conveyor between a supply conveyor and said second feeder conveyor;

at least one article sensor operable to sense articles on said first conveyor and to develop a signal indicative of whether articles on said first feeder conveyor are in abutted relationship;

means responsive to said signal for increasing the speed of said first feeder conveyor above the speed of said second feeder conveyor when abutted articles are not detected on said first feeder conveyor to thereby cause articles on said first feeder conveyor to accumulate in abutting relationship, and for decreasing the speed of said first feeder conveyor to match the speed of said second feeder conveyor when abutted articles are detected on said first feeder conveyor to thereby minimize slippage of said first feeder conveyor relative to said articles thereon accumulated on said first feeder conveyor;

means for mounting said third feeder conveyor between said second feeder conveyor and said fourth feeder conveyor;

means for continuously controlling the velocity of said second feeder conveyor to time said articles relative to a plurality of flights on a flighted conveyor, said timed articles being delivered to said third feeder conveyor;

means for continuously controlling the velocity of said third feeder conveyor to accelerate said articles to match the speed of said flighted conveyor, said matched articles being delivered to said fourth feeder conveyor;

an article sensing means mounted adjacent to said fourth feeder for sensing said articles and developing an article signal when an article is detected; and

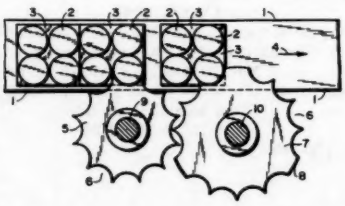
means for using said article signals to continuously control the velocity of said fourth feeder conveyor to phase the individual articles to match the flights on said flighted conveyor.

5,082,104

APPARATUS FOR TRANSPORTING AND SEPARATING OBJECTS

Daniel Marceau, Beauvais, France, assignor to Van den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.

Filed Jun. 29, 1990, Ser. No. 546,171
Int. Cl.[5] B65G *47/26*
U.S. Cl. 198—419.3 **6 Claims**



1. An apparatus for transporting and separating objects that are transported in a continuous row on a conveyer belt or similar device and are separated into collated units for further processing, wherein said apparatus comprises:

a first star wheel (5), a second star wheel (7) and at least one continuous row of objects, wherein the second star wheel is located downstream of the first star wheel in the direction of transport of the continuous row of objects along the conveyer belt;

wherein said first star wheel (5) is driven slower than the speed of the conveyer belt and the second star wheel (7) moves at a speed not slower than the speed of the first star wheel and at most at the speed of the conveyer belt;

said first star wheel engaging the objects in the continuous row before the units are separated and said second star wheel engaging the objects after the units have been separated;

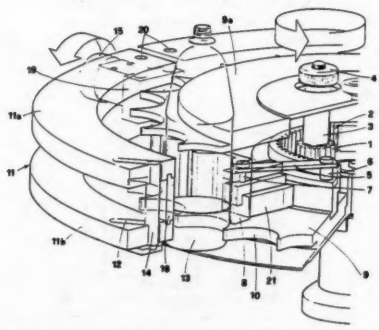
wherein the distance between the center of rotation of the two star wheels can be adjusted and is set to be equal to or greater than the length of the units which require separation.

5,082,105

ADJUSTABLE STAR WHEEL CONVEYOR FOR CONTAINERS OF CIRCULAR AND NON-CIRCULAR SECTION

Franco Tincati, Parma, Italy, assignor to Sarcmi S.P.A., Parma, Italy

Filed Jul. 13, 1990, Ser. No. 552,433
Claims priority, application Italy, Aug. 2, 1989, 40125 A/89
Int. Cl.[5] B65G *29/00*
U.S. Cl. 198—473.1 **6 Claims**



1. An adjustable star wheel conveyor for containers of circular and non-circular section, comprising:

two disks (9, 9*a*) rotatable about a center axis (22) and exhibiting a plurality of external peripheral recesses (10) matched to the external profile of the containers guided and conveyed by the wheel;

a plurality of push rods (8), each impinging on a relative container (13), installed in number equal to the number of recesses (10) and slidable between the two disks in a radial direction;

positioning means by which to effect a radial displacement of the push rods (8) simultaneously and through an identical distance;

an external guide (11) divisible into a plurality of sections, each affording a slot (12) in which to insert a pin (14) designed to permit and limit movement of the guide according to the shape of the slot;

adjustment means, supported by an external frame (17), by which the guide (11) can be moved toward or distanced from the containers in the event of a change in container diameter.

5,082,106

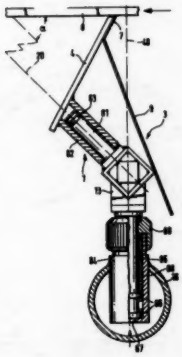
STRIPPING DEVICE FOR THE RETURN RUN OF CONVEYOR BELTS

Hans O. Schwarze, Esseler Str. 170, D 4350 Recklinghausen, Fed. Rep. of Germany

Continuation of Ser. No. 76,728, Jul. 23, 1987, Pat. No. 4,850,474. This application Jul. 24, 1989, Ser. No. 383,449
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1986, 3626131
The portion of the term of this patent subsequent to Jul. 25, 2006, has been disclaimed.
Int. Cl.[5] B65G *45/00*
U.S. Cl. 198—499 **13 Claims**

1. In a stripping device for the return run of a conveyor belt, said device comprising a carrier adapted to be mounted extending transversely to the direction of travel of said belt; and a plurality of mutually adjacent stripping elements each having a mounting foot by which said element is mounted on said carrier, a stripping body which is supported by a hinge and resiliently by a torsion spring around a first axis between said foot and said stripping body, and stripping blade means held on said stripping body; the improvement wherein for maintaining

parallelity of said stripping blade means with said belt each of said stripping elements or only said stripping body of each of said stripping elements is adapted to be freely swivellable



around a second axis which intersects with a plane of the belt and forms an inclined angle of 90° or less with the approaching part of said belt, wherein said first axis is not parallel with said second axis.

5,082,107

STORAGE CONVEYOR

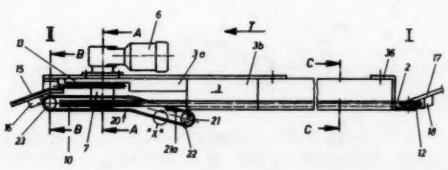
Erwin Grube, Bielefeld; Walter Kuhlmann, Lage, and Friedhelm Elges, Bielefeld, all of Fed. Rep. of Germany, assignors to Dürkopp Adler Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 29, 1990, Ser. No. 575,408

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1989, 3929156

Int. Cl.[5] B65G *17/32*

U.S. Cl. 198—680 **13 Claims**



1. A storage conveyor for storing hangers incorporating hanger hooks, comprising:

driven conveyor means; loading means at a loading point for feeding the hangers onto the conveyor means in a direction of transport;

removal means at a removal point for removing hangers from the storage conveyor, said removal means raising the hangers continuously off of the conveyor means, while maintaining their previous direction of advance and maintaining at least their previous rate of advance, thereby placing the hangers in a position to be removed from the storage conveyor; and

means for supporting and driving the removal means in the direction of transport, the removal means being conducted from below the conveyor means to above the conveyor means, passing adjacent to a portion of the conveyor means at an engagement point, and being guided so that it engages each hanger hook at the engagement point and thereby lifts such hanger off the conveyor means and onto the removal means.

5,082,108

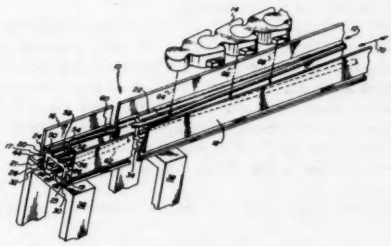
MODULAR CONVEYOR BEAM AND METHOD OF ASSEMBLY THEREFOR

John J. Douglas, Lynch Station, Va., assignor to Simplimatic Engineering Company, Lynchburg, Va.

Filed Jul. 20, 1989, Ser. No. 382,534

Int. Cl.[5] B65G *39/18*

U.S. Cl. 198—836.4 **22 Claims**



1. A modular conveyor assembly for supporting a conveyor for transporting articles, said assembly comprising:

(a) a plurality of spacers positioned at spaced apart intervals along said assembly, said spacers having on a first side thereof a plurality of conveyor surface support receiving elements;

(b) elongate side guides for attachment to said spacers at second and third sides thereof; and

(c) means for snappingly fitting said side guides to said spacers;

said snappingly fitting means comprising interlocking tongues and grooves on said side guides and spacers at opposing sides thereof;

said spacers and said side guides each having elongate interengaging tongues and grooves at one location and interengaging interference fitting edges at another location spaced from said first location so as to permit engagement of a side guide to a spacer at said one location before locking said side guide to said spacer at said another location;

said side guide having opposing edges with an elongate tongue and groove formed along said side guide towards one said edge and said spacer has a corresponding tongue and groove formed along a side thereof, said tongues for fitting into said grooves before locking said side guide to said spacer at the other of said edges; and

one of said tongues protruding from said side guide in a downwardly depending and inwardly extending direction and said other tongue protrudes from said spacer in an upwardly depending and outwardly extending direction, and

said side guide is supportable on said spacer by interfitting said tongues;

whereby said assembly can be conveniently constructed.

5,082,109

HANDLING APPARATUS FOR DISPLACING, IN A SUBSTANTIALLY HORIZONTAL LONGITUDINAL DIRECTION, UNITARY LOADS RESTING ON ROLLING MEMBERS

Pierre Blondeau, Montbard, France, assignor to Societe Interroll, Venaray-Les-Laumes, France

Continuation of Ser. No. 298,185, Jan. 17, 1989, abandoned. This application May 8, 1990, Ser. No. 520,113

Claims priority, application France, Jan. 22, 1988, 88 00706

Int. Cl.[5] B65G *13/06*

U.S. Cl. 198—781 **20 Claims**

1. A modular unit handling apparatus for moving unitary loads in a substantially horizontal longitudinal direction, comprising a modular structure adapted for connection with other modular structures of the same type in either its longitudinal

direction of movement of loads or in a direction transverse to the movement of loads, each said modular structure including:

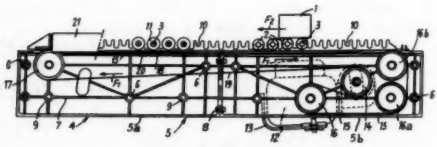
rolling members, said unitary loads resting on said rolling members, and means for driving said rolling members including endless drive belt means operatively associated with said rolling members by pressure exerted on said rolling members responsive to engagement with said unitary loads carried by said rolling members;

a gear motor for driving said endless drive belt means and rotating said rolling members;

shafts having end sections, said rolling members being mounted freely on said shafts and each said shafts including sufficient roller members therefore between said lateral walls, according to the width of said apparatus;

chassis means including two parallel and vertical, lateral walls and crosspieces for joining said parallel lateral walls together at a distance forming a width of said chassis means said shafts, being rotationally mounted on said chassis means;

said shafts supporting said rolling members being rotationally mounted with respect to said chassis and the driving of said rollers being effected by the friction existing between said driving shaft and said rollers resting directly thereon;



said parallel lateral walls including modular wall elements assembled end to end lengthwise of the apparatus by bolts so that the length of the apparatus may be made larger or smaller by adding or removing lateral walls;

said crosspieces including bars provided at their ends with axial tappings for receiving screws passing through holes pierced in said parallel lateral walls, whereby the width of the apparatus is made larger or smaller by using longer or shorter lengths of said crosspieces;

each said wall element on its upper longitudinal edge thereof and over its whole length having a succession of adjacent recesses;

each said recess being formed as an upwardly open U; and

said end sections of said shafts on which said rolling members are mounted being freely engaged in said open U; and

said endless drive belt means extending along one of said lateral walls.

5,082,110

PROTECTIVE CASE FOR COLLECTIBLE BASEBALLS

Alan C. Hager, 65 High Ridge Rd., Suite 227, Stamford, Conn. 06905

Filed Apr. 1, 1991, Ser. No. 678,715
Int. Cl.[5] B65D *85/00*
U.S. Cl. 206—232 **7 Claims**

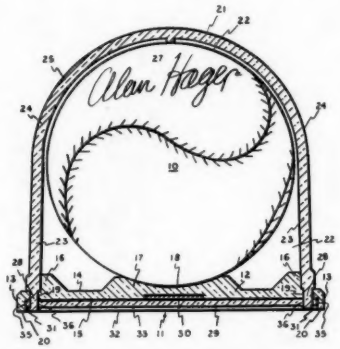
1. A case for protectively confining a collectible baseball, said case comprised of:

a) a transparent dome comprised of a circular cylindrical sidewall portion and a semispherical upper portion, said sidewall portion having a lower extremity encircled by a flat outwardly directed first lateral shoulder and having at least two downwardly directed posts, said upper portion having downwardly directed holding means,

b) a baseplate bounded by a circumferential edge and upper and lower surfaces, and having an upwardly directed concave depression adapted to seat a baseball, apertures spaced apart to receive said posts, and a second lateral shoulder configured to abut with and be bonded to said first lateral shoulder, and a downwardly opening recess associated with said lower surface,

c) a transparent disc disposed within said recess and bonded to said baseplate, and

d) a thin documentation panel sandwiched between said disc and the lower surface of said baseplate, whereby



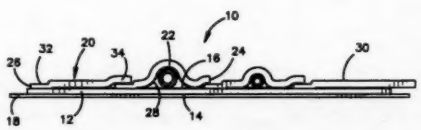
e) the bonding of said dome to said baseplate causes a baseball disposed within said dome to be immobilized by engagement between said downwardly directed holding means and said concave depression.

5,082,111

SURGICAL INSTRUMENT HOLDER

John D. Corbitt, Jr.; Kenneth M. Kuzmick, both of West Palm Beach; Stephanie L. O'Hearn, Boca Raton, all of Fla., and Albert N. Santilli, Gates Mills, Ohio, assignors to Surgical Concepts, Inc., Cleveland, Ohio

Filed Mar. 12, 1991, Ser. No. 667,964
Int. Cl.[5] B65D *73/00;* **A61M** *25/02*
U.S. Cl. 206—363 **18 Claims**



1. A device for holding surgical instruments, comprising:

a base member having first and second opposed surfaces, the first surface including an adhesive layer;

a plurality of flaps connected to the base member, each flap including:

a body portion having first and second ends, and

a hinge connecting the first end of the body portion to the second surface of base member; and

means for releasably connecting the body portion of each flap to the second surface of the base member.

14. A device for holding surgical instruments, comprising:

an elongate base member having first and second opposed surfaces, the first surface including an adhesive layer;

a layer of protective material disposed over the first surface of the base member, the layer of protective material being removable so as to expose the adhesive layer;

a plurality of flaps connected to the base member and arranged end-to-end so as to form an elongate strip, each flap including:

a body portion having first and second ends and first and second opposed surfaces, the first surface being exposed to the user and the second surface being in contact with the second surface of the base member,

a hinge connecting the first end of the body portion to the second surface of the base member, and

a tab at the second end of the body portion, the tab projecting upwardly from the body portion of the flap so as to remain out of contact with the second surface of the base member, and

means for releasably connecting the second surface of each flap to the second surface of the base member, the means for releasably connecting including hook material included as part of a selected one of the second surface of the flaps or the base member, and loop material included as part of the other of the second surface of the flaps or the base member.

5,082,112

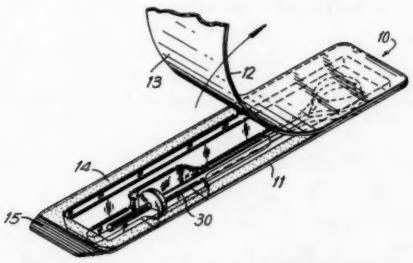
PACKAGE FOR ENDOSCOPIC LIGATING INSTRUMENT

Douglas M. Dunklee, Bridgeport, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Feb. 5, 1991, Ser. No. 650,744

Int. Cl.[5] B65D *75/26*

U.S. Cl. 206—363 **21 Claims**



1. A package for an endoscopic ligating instrument possessing an elongated tubular body and a ligature contained therein which terminates outside one end of the tubular body in a contractible ligating loop, the package comprising:

a) a relatively rigid instrument holding member having a base;

b) a first channel in the base of the instrument holding member for receiving the elongated tubular body of the instrument;

c) a ligating loop retaining member possessing a maximum transverse dimension which is greater than the maximum transverse dimension of the first channel projecting upwardly from the base of the instrument holding member and positioned at one end of the first channel, the ligating loop retaining member receiving the ligating loop of the instrument therearound when the elongated tubular body of the instrument is received within the first channel of the instrument holding member, the ligating loop retaining member being configured to maintain the approximate shape of the ligating loop in an open position; and,

d) a cover member adapted to be mounted to and to enclose the instrument holding member.

11. A sealed sterile package comprising:

a) an endoscopic ligating instrument possessing an elongated tubular body and a ligature contained therein which terminates outside one end of the tubular body in a contractible ligating loop;

b) a relatively rigid instrument holding member having a base receiving the instrument therein;

c) a first channel in the base of the instrument holding member receiving the elongated tubular body of the instrument;

d) a ligating loop retaining member projecting upwardly from the base of the instrument holding member and receiving the ligating loop of the instrument therearound, the ligating loop retaining member being configured to maintain the approximate shape of the ligating loop in an open position; and,

e) a cover member enclosing the instrument holding member.

5,082,113

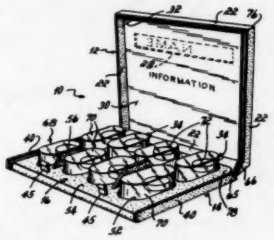
UNIT-DOSE MEDICATION HANDLING AND DISPENSING SYSTEM WITH SIGNALLING TABS AND FLAP

Jerome M. Romick, 170 N. Drexel Ave., Columbus, Ohio 43209

Filed May 2, 1990, Ser. No. 518,741

Int. Cl.[5] B65D *73/00*

U.S. Cl. 206—459 **10 Claims**



5. A medication dispensing package, comprising:

a package for receiving a supply of medication having at least one surface, with said surface having a plurality of edges;

a plurality of tabs formed from a portion of said surface, wherein each tab is bordered by an edge length and two spaced apart perforated lines that extend from the bordering edge length, and each tab has signalling indicia displayed thereon, with a legend corresponding to each indicia printed on a portion of said surface located adjacent to each tab,

whereby each signal tab is positionable, at the point where said lines end, from a signalling to a non-signalling position such that when said tabs are in the signalling position, the indicia and legends are visible, and when said tabs are in the non-signalling position, only the legends are visible;

a label receiving area located on said surface and adjacent to said tabs;

a flap formed from a portion of said surface bounded by a folded and a free edge and located such that said flap can be bent along the folded edge to overlie said signal tabs, legends and a portion of said label receiving area.

5,082,114

CHILD RESISTANT UNIT DOSE PACKAGE

Leonid Bunin, Woodbridge, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 15, 1990, Ser. No. 597,644

Int. Cl.[5] A61J *1/00*; **B65D** *43/26*

U.S. Cl. 206—539 **3 Claims**

1. A unit dosage package comprising:

(a) a container member adapted to receive medication in dosage form, said container member having:

(i) opposed, upwardly extending side walls;

(ii) opposed, upwardly extending front and rear walls; and,

(iii) an outwardly projecting flange on said front wall; and,

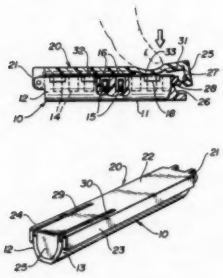
(b) a cover member sized to fit over said container member and having:

(i) a downwardly extending rear wall hingeably secured to the upwardly extending rear wall of said container member;

(ii) a downwardly extending front wall opposed to said downwardly extending rear wall and having an inwardly projecting flange adapted to engage the out-

wardly projecting flange on the front wall of said container member in interlocking relationship, said interlocking relationship being concealed when said container member and said cover member are closed and secured to each other by said interlocking relationship;

(iii) opposed, downwardly extending reinforcing flanges which partially overlap the opposed, upwardly extending side walls of said container member, said reinforcing flanges being interrupted to define a non-reinforcing area; and,



(iv) opposed peripheral slits extending inwardly from the front edge of said cover member in the area substantially common with said non-reinforcing area, said peripheral slits and said nonreinforcing area together forming a flexing region in said cover member such that when pressure is applied to said flexing region, said outwardly and said inwardly projecting flanges become disengaged permitting said cover member to be rotated to open said dosage package.

5,082,115

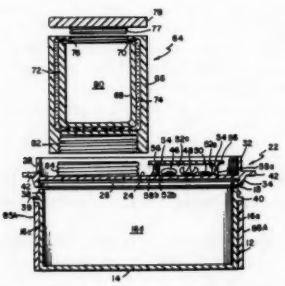
MEAL CONTAINER

Steven R. Hutcheson, 69 Sturges Rd., Reading, Mass. 01867

Filed May 7, 1991, Ser. No. 696,834

Int. Cl.[5] B65D *81/18*

U.S. Cl. 206—545 **19 Claims**



1. A portable meal container for foods, liquids, and utensils comprising:

a base member for containing food having a substantially rectangular bottom wall and four integral perpendicular side walls of equal height terminating in a unitary top rim;

a detachable cover means having top and bottom surfaces and adapted to form a tight seal with the top rim of the base member;

a liquid container means for receiving and disbursing liquid;

means for releasably attaching the liquid container means to the top surface of the detachable cover means comprising a threaded neck section extending upwardly from a portion of the top surface of the detachable cover means and a conforming inner threaded neck section positioned on the bottom surface of the liquid container means whereby the liquid container means is releasably screwed to the threaded neck section of the detachable cover means; and

a compartment means for containing at least one eating utensil within the compartment means;

said compartment means being attached to a portion of the top surface of the cover member.

15. A portable meal container for foods, liquids, and utensils comprising:

a base member for containing food having a substantially rectangular bottom wall and four integral perpendicular side walls of equal height terminating in a unitary top rim;

a detachable cover means having top and bottom surfaces and adapted to form a tight seal with the top rim of the base member;

a liquid container means for receiving and disbursing liquid;

means for releasably attaching the liquid container means to a portion of the top surface of the cover member;

a compartment means for containing at least one eating utensil within the compartment means;

said compartment means being attached to a portion of the top surface of the cover member; and

a handle means for carrying said portable meal container removably coupled to the liquid container means and a remote end of the detachable cover means.

5,082,116

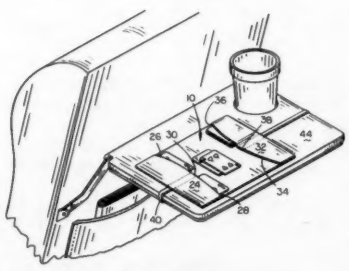
TRAVELING CARD TABLE

Nancy E. Schanne, 9703 Fieldcrest Dr., Omaha, Nebr. 68114

Filed Mar. 26, 1991, Ser. No. 675,459

Int. Cl.[5] B65D *69/00*

U.S. Cl. 206—579 **4 Claims**



1. A traveling card table, comprising,

a flat, flexible sheet member having a top surface, a bottom surface, opposite ends and opposite sides,

said sheet member having a plurality of card receiving pockets provided on its upper surface,

and a flexible strap means at the bottom surface of said sheet member which extends between the opposite ends or the opposite sides thereof for receiving a supporting member to enable said sheet member to be positioned thereon.

5,082,117

CARTON HAVING A POUR SPOUT

John Zimmermann, Scarborough, Canada, assignor to Paperboard Industries Corporation, Toronto, Canada

Filed Jul. 8, 1991, Ser. No. 726,832

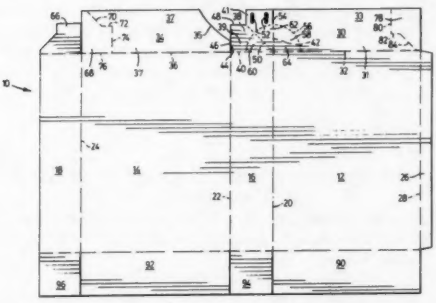
Int. Cl.[5] B65D *5/70*

U.S. Cl. 229—218 **3 Claims**

1. In a carton of the type having; first and second main panels and first and second side panels which are connected to one another so as to articulate between a knocked-down compact configuration and an open sleeve configuration, first and second main flaps hingedly connected to the first and second main panels respectively and first and second side flaps hingedly connected to the first and second side panels respectively, each of said flaps having a proximal end adjacent and a

distal end remote from its associated main or side panel and wherein pour spout sub-panels are initially formed as integral parts of adjacent first main and first side flaps and are severable from the remainder of said adjacent first main and first side flaps respectively to form a pour spout in use, the improvement wherein:

said adjacent first main and first side flaps each have marginal edge portions located at their distal end outwardly from the pour spout sub-panels with respect to their associated first main and first side panels respectively, said marginal edge portions being secured to one another in a face-to-face relationship so as to cause the side flap to buckle inwardly upon itself to draw the first main flap toward an outwardly overlying relationship with respect to said first side flap as said carton moves from said knocked-down configuration to said open sleeve configuration to facilitate the closing of a first end of the carton in use.

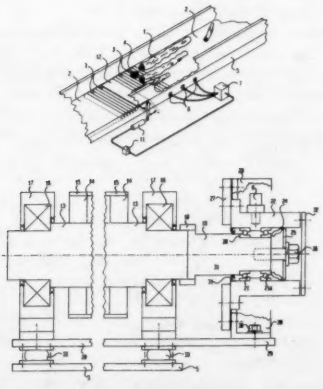


5,082,118

DEVICE FOR SEPARATING HARD OBJECTS, SUCH AS STONES, FROM A STREAM OF WOOD

Kari Rintala, Helsinki; Jyrki Paarma, Soramaki; Mikko Sissala, Hyvinkaa; Ilkka Valkonen, Lahti, and Pekka Kokko, Hollola, all of Finland, assignors to Kone Oy, Finland

Continuation-in-part of Ser. No. 314,541, Feb. 23, 1989, Pat. No. 4,955,541. This application Sep. 10, 1990, Ser. No. 580,280
Claims priority, application Finland, Feb. 29, 1988, 880930
The portion of the term of this patent subsequent to Sep. 11, 2007, has been disclaimed.
Int. Cl.[5] B01C *5/34*
U.S. Cl. 209—599 **15 Claims**



1. A device for separating hard objects from a continuous stream of logs and/or blocks of wood in an apparatus for the continuous conveyance of logs and/or blocks of wood, which device comprises:

a. a metal conveyor section comprised of metal rollers for conveying said wood stream and a metal support structure for said metal rollers;

b. at least one vibration sensitive transducer in conductive contact with the metal conveyor section, for registering vibrations; said transducer being in conductive contact with a roller of said metal conveyor section, said roller being provided with an extended shaft means;

c. means operatively connected to said at least one vibration sensitive transducer for distinguishing between signals generated by at least one said transducer in response to impact of logs and/or blocks of wood and signals generated on impact of hard objects on said conveyor section, including means for distinguishing between the frequencies of vibration caused respectively by logs and/or blocks of wood and by hard objects;

d. a control unit which incorporates said distinguishing means, for generating a control signal by which hard objects conveyed along with the wood stream can be detected on the basis of the vibration signals they generate; and

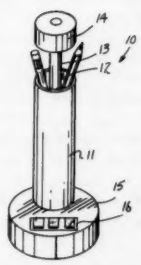
e. actuator means which upon receipt of a control signal from said control unit, activates an exit gear; said exit gear being controlled by said control unit through said actuator means, so that said hard objects fall out from a wood stream passing through the apparatus.

5,082,119

SECURITY PEN AND PENCIL CADDY APPARATUS

Lawrence J. Bingley, 9910 S. Prospect, Chicago, Ill. 60643

Filed Dec. 24, 1990, Ser. No. 634,745
Int. Cl.[5] E05B *73/00*
U.S. Cl. 211—4 **5 Claims**



1. A security writing instrument caddy apparatus comprising,

a support housing, the support housing coaxially aligned and including a lower terminal end and an upper terminal end, the lower terminal end fixedly mounted to a support base, and

lock means overlying the support housing at an upper edge coaxially aligned therewith from a first extended position to a second lowered position in communication with the upper edge, and

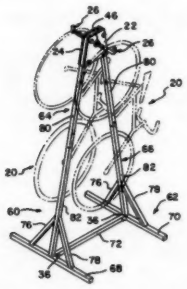
wherein the lock means includes an inverted cup-shaped piston coaxially aligned overlying the upper edge of the support housing, with a piston rod, wherein the piston rod fixedly mounts the piston at an upper terminal end, and the piston rod extends coextensively and coaxially through the support housing and into the support base, and

including latch means cooperative with a lower terminal end of the piston rod within the support base to permit extension of the piston rod from the second position to the first position, and

wherein the lock means includes a piston rod top base plate fixedly and coaxially mounted to the lower terminal end

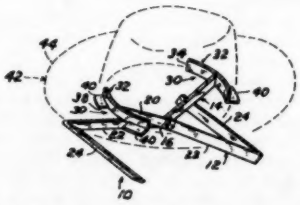
of the piston rod and orthogonally oriented thereto spaced from a piston rod bottom base plate, with the piston rod bottom base plate mounted within the support base, and a spring member captured between the piston rod top base plate and the piston rod bottom base plate, and the lock further including a solenoid within the support base, and a solenoid rod retractable relative to the solenoid to an extended position to overlie the piston rod top base plate for securement of the piston in the second position and with the piston rod retracted to permit extension of the piston rod and piston to the first position.

5,082,120
FREE STANDING BIKE RACK
James S. Vega, 109 Granada Ave., #C, Long Beach, Calif. 90803
Filed May 13, 1988, Ser. No. 193,798
Int. Cl.[5] B60P *3/06*
U.S. Cl. 211—20 **7 Claims**



1. A freestanding bicycle rack comprising: a base for resting on a supporting surface, a fair of stanchions mounted on said base and rising thereabove to a height greater than the longitudinal length of a bicycle, coupling means joining said stanchions together at their upper extremities, and hook means extending laterally outwardly from said stanchions and located above said base a distance greater than the longitudinal length of a bicycle to hold a bicycle placed thereon in suspension above said supporting surface and above the level of said base, wherein said stanchions rise from said base and converge toward each other in a vertical plane, and said hook means is comprised of a pair of hooks which extend laterally outwardly in opposite directions from said vertical plane.

5,082,121
PORTABLE HAT CADDY
Kenneth W. Grubb, 3505 E. 186th North, Skiatook, Okla. 74070
Filed May 8, 1991, Ser. No. 696,882
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—33 **2 Claims**



1. A hat caddy, comprising:

a pair of identical elongated arm assemblies pivotally interconnected substantially medially their ends for pivoting movement of their respective end portions toward and away from each other;

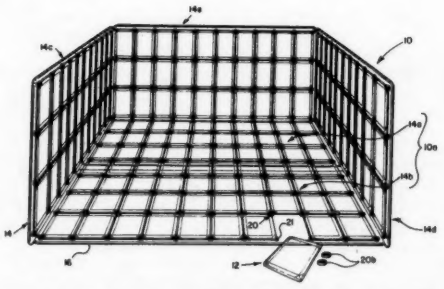
each said arm assembly being substantially L-shaped having a leg portion and a foot portion;

a hat crown and brim supporting means on cooperating ends of said arm assemblies for supporting a hat when disposed thereon in crown upright position; and,

a foot portion on each arm assembly opposite the crown and brim supporting means for supporting the hat caddy upright on a horizontal surface,

each said leg portion being characterized by substantially one-half its length laterally offset angularly with the foot portion with respect to the longitudinal axis of the remaining one-half leg portion to form a pocket nesting the crown and brim supporting means on the other arm assembly when said hat caddy arm assemblies are collapsed to a caddy stored or travel position.

5,082,122
UNIT FOR DISPLAYING A PLURALITY OF ITEMS IN HOLDERS
Charles M. Connor, Jr.; John K. Connor, and H. B. Stroup, Jr., all of Asheville, N.C., assignors to Collector's Products Corporation, Asheville, N.C.
Filed Mar. 26, 1990, Ser. No. 499,161
Int. Cl.[5] A47G *19/08*
U.S. Cl. 211—41 **22 Claims**



1. A display unit for receiving and containing a plurality of display item holders, comprising:

(a) a planar member, having a top surface and a bottom surface; and

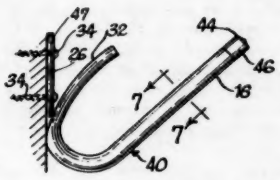
(b) means integral with said planar member top surface for receiving, containing and displaying a plurality of display item holders, including a plurality of locators fixed to and extending normally from said planar member, and holder retainers releasably engaging said locators, four adjacent said locators defining a location therebetween for retaining a single item holder, said locators being aligned in a plurality of horizontal and vertical rows defining thereby a plurality of said location on said display unit for receiving a plurality of display item holders.

5,082,123
SPORTING GOODS RACK
Rocky D. Lamb, 4637 Baynard St., San Diego, Calif. 92109
Filed Jul. 8, 1991, Ser. No. 726,850
Int. Cl.[5] A47F *5/08*
U.S. Cl. 211—87 **11 Claims**

1. A wall-mountable sporting goods rack comprising:

(a) a pair of bars, each having an upright portion for mounting to a substantially vertical surface, an extended support portion, and an intermediate portion joining said upright and said extended support portion as a continuous member;

(b) each of said bars having a rigid inner core and an outer foam sleeve slidably covering said inner core;



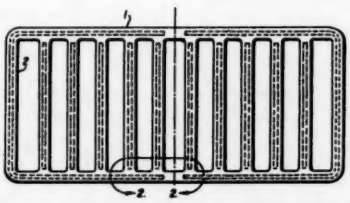
(c) the foam sleeve covering the upright portion of each of said bars having a rearward split to permit direct contact between said core and an upright surface.

5,082,124

GRID FOR ELECTRICAL HOUSEHOLD APPLIANCES, MADE FROM A THERMOPLASTIC MATERIAL

Alberto Bonvini, Gorgonzola, and Francesco Mascia, Guanzate, both of Italy, assignors to Centro Sviluppo Settori Impiego S.r.l., Milan, Italy

Filed Oct. 23, 1990, Ser. No. 601,622
Claims priority, application Italy, Oct. 23, 1989, 21983/89[U]
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—153 **6 Claims**



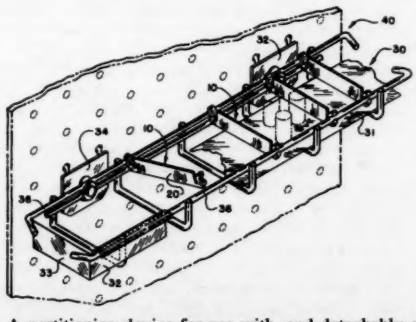
1. Grid for electric household appliances made from a thermoplastic polymer, comprising a peripheral edge whose perimeter is of substantially quadrangular shape, and a plurality of rods inserted inside said edge, parallel to one of the sides of the perimeter and united to said edge without discontinuities, said grid obtained by molding inside a single mold.

5,082,125

PARTITIONING DEVICE

David K. Ninni, Ravenna, Ohio, assignor to Wright Tool Company, Barberton, Ohio

Filed Mar. 27, 1991, Ser. No. 675,800
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—184 **10 Claims**



1. A partitioning device for use with, and detachably connectable to a display shelf having a pair of parallel elongated support means, said partitioning device comprising:

a substantially planar middle body portion having a top edge 1*a* bottom edge and a pair of opposing ends; and

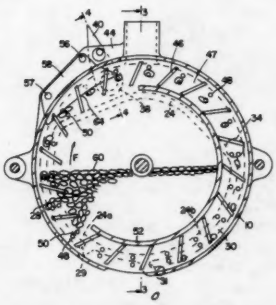
a pair of substantially identical flexible locking means having first and second ends thereto, the first end of each of said locking means being connected to a respective end of said body portion adjacent said bottom edge the second end of each of said locking means extending upwardly from said first end toward said top edge and having an annular locking member with an open surface, said open surface of each said locking members facing away from said body portion and being dimensioned to be releasably locked onto and in slidable engagement with one of said support means of said display shelf.

5,082,126

DISTRIBUTOR FOR A MONOSEED SOWING MACHINE

Michel Ribouleau, Paris, France, assignor to Ateliers Ribouleau, Largeasse, France

Continuation of Ser. No. 342,028, Apr. 24, 1989, Pat. No. 4,949,869. This application May 16, 1990, Ser. No. 524,002
Claims priority, application France, Apr. 22, 1988, 88 05398
The portion of the term of this patent subsequent to Aug. 21, 2007, has been disclaimed.
Int. Cl.[5] A01C *7/04*
U.S. Cl. 221—211 **4 Claims**



1. A distributor for a monoseed sowing machine comprising a generally cylindrical case, a horizontal shaft supported on said case, a distributor disk rotatively mounted on said shaft and provided with circumferentially spaced-apart orifices, said disk separating in said case a seed container from a suction device so that the orifices are subjected to a depression which retains the seeds taken from the container during at least a part of their angular travel about said shaft, a controlled deflector element for eliminating double seeds and, in a lower part of the case, a seed discharge opening, said suction device comprising, inside the case, a depression passageway, wherein an inner wall of the depression passageway is provided with a controlled air intake and wherein the controlled deflector element and the controlled air intake are controlled by a pivotal lever.

5,082,127

COLLAPSIBLE LIFT TROLLEY

Jeng-Shiung Huang, Chia Yi Hsien, Taiwan, assignor to Tai Lio Enterprise Co., Ltd., Chia Yi Hsien, Taiwan

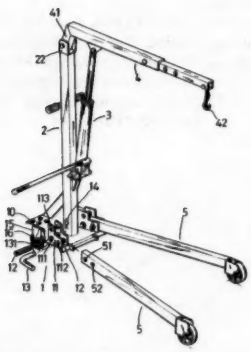
Filed Sep. 11, 1990, Ser. No. 581,580
Int. Cl.[5] B66C *23/26, 23/44, 23/00*
U.S. Cl. 212—265 **1 Claim**

1. A collapsible lift trolley comprising:

a pair of longitudinally directed stringer members fixedly attached and pivoted to a vertically directed support rod to provide for transition from a deployed to a collapsed configuration of said collapsible lift trolley;

a lift arm having a hinged end section bent to allow for a compact structure when said lift trolley is in said collapsed configuration;

base means for stabilizing said lift trolley including a platform member and a wheel secured under the platform member, said base means further including connection means coupled to each of said stringer members and said platform member, said connection means respectively comprising a pair of L-shaped bracket members correspondingly formed with aligned pivot holes formed through a mid-portion thereof and positioning holes formed in outer portions thereof, said positioning holes being equally spaced from said pivot hole of a corresponding bracket member, said positioning holes defining a first position and a second position having an envelope providing a substantially orthogonal configuration, each of said longitudinally directed stringer members having a first end formed with spaced openings at a distance equal to the distance between said pivot hole and either of said positioning holes formed through said connection means, and a second end of each of said longitudinally directed stringer members mounting a wheel;



a pivot pin member extending through said pivot hole in said connection means and said opening in a respective stringer member to pivotally connect said first end of said respective stringer member to said base means;

a quick disconnect pin extending through either of said positioning holes in said connection means to secure said stringer member in either one of said two positions defined by said pivot and positioning holes in said connection means;

a vertically directed support rod extending from said base means and coupled to said lift arm; and,

a hydraulic jack fixedly attached to said support rod and said lift arm on opposing ends thereof in a manner such that a displacement from said deployed to said collapsed configuration is provided by folding of said stringer members and lowering of said lift arm in a substantially vertical plane to said collapsed configuration.

5,082,128

CRANE HAVING A MULTI-SECTION BOOM

Hermann Franzen, Mönchen-Gladbach; Walter Köllner, Korschenbroich; Dieter Klessinger, Düsseldorf, and Joachim Kröll, Jüchen, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Dec. 19, 1989, Ser. No. 453,293

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1988, 3842726

Int. Cl.[5] B66C *23/26*

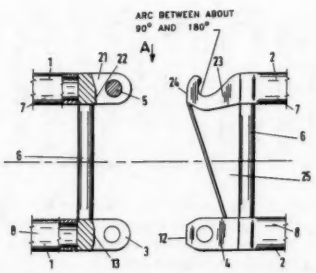
U.S. Cl. 212—266 **1 Claim**

1. Apparatus for interconnecting crane boom sections, said crane boom sections comprising a first boom section and a second boom section, each of said first and second boom sections having a substantially central longitudinal axis, and each of said first and second boom sections comprising at least one lower elongated member and at least one upper elongated member spaced from said lower elongated member, means connecting at least a portion of said upper and lower elongated members in a substantially parallel configuration, said apparatus for interconnecting being operable to effectively transmit a force between said lower members of said first and second boom sections and another force between said upper members of said first and second boom sections, said apparatus for interconnecting comprising:

a hook-shaped member provided on said upper elongated member of said first boom section;

said hook-shaped member having a lip portion, said lip portion projecting outwardly from said substantially central axis of said first boom section to form a concave depression, said concave depression being concave inwardly toward said substantially central axis of said first boom section;

a bolt member attached to said upper elongated member of said second boom section, said bolt member having a longitudinal axis which is disposed substantially perpendicular to said substantially central longitudinal axis of said second boom section, said bolt member being dimensioned and configured to be received within said concave depression formed by said lip of said hook-shaped member provided on said upper elongated member of said first boom section;



a fork member provided on said at least one upper elongated member of said second boom section, said fork member having at least a pair of extending flange portions, said pair of extending flange portions being spaced from one another to form an open space therebetween, wherein said bolt member extends between said pair of extending flange portions and across said open space therebetween, and wherein said hook-shaped member provided on said upper elongated member of said first boom section is dimensioned and configured to be disposed between said pair of extending flange members;

a first upper abutment surface formed on an outermost extremity of said hook-shaped member, and a second upper abutment surface disposed between said pair of extending flange portions of said fork member;

said first and second upper abutment surfaces being substantially planar surfaces aligned substantially perpendicularly to said substantially central longitudinal axes of said first and second boom sections, respectively;

lower connection means for connecting said lower elongated members of said first and second boom sections together and for transmitting said force therebetween; and

at least one of said at least one lower elongated members of said first and second boom sections comprising at least one strap member, and the other of said at least one lower elongated members of said first and second boom sections comprising a fork member, said fork member having at least a pair of extending flange portions, said pair of extending flange portions being spaced from one another to

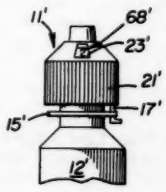
form an open space therebetween, and wherein said strap member is dimensioned and configured to be disposed in said open space between said pair of extending flange members upon interconnection of said first and second boom sections.

5,082,129

SNAP-LOCK FOR SCREW-CAP CONTAINER

Steven G. Kramer, San Francisco, Calif., assignor to Medcor, Inc., San Francisco, Calif.

Filed Dec. 17, 1990, Ser. No. 628,703
Int. Cl.[5] B65D *55/02*
U.S. Cl. 215—221 **10 Claims**



1. A screw-cap container comprising

a container having a neck terminating at a dispensing opening, first screw thread means and an annular flange formed externally and extending circumferentially on said neck, said flange being positioned vertically below and having an annular outer surface disposed radially outwardly from an outer surface of said first screw thread means and being discontinuous to define a locking slot between opposite ends thereof,

a closure cap having second screw thread means formed internally thereon for engaging said first screw thread means in threaded engagement therewith whereby said closure cap can be rotated to a fully tightened condition on said container when said first and second screw thread means are fully engage, and

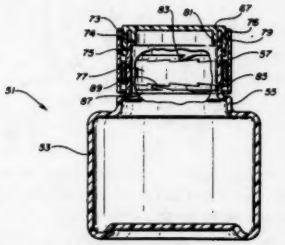
lock tab means, having an inner surface disposed radially between the outer surface of said flange and outer surface of said first screw thread means, secured to said closure cap for flexing radially outwardly when its inner surface engages the outer surface of said flange in response to a screwing-down of said closure cap on said container and for automatically flexing radially inwardly into engagement within said locking slot when said closure cap is in its fully tightened condition on said container to prevent relative rotation between said container and said closure cap and exhibiting sufficient flexibility to permit said lock tab means to be moved radially outwardly from its engagement within said locking slot for permitting said closure cap to be unscrewed and removed from said container, said lock tab means comprising a vertically disposed lock tab extending downwardly from said closure in close proximity to the neck of said container and wherein said closure cap further comprises a vertically disposed cylindrical outer wall having a predetermined thickness and wherein said lock tab is formed integrally with said outer wall and has a thickness at least substantially the same as the thickness of said outer wall and is vertically aligned therewith.

5,082,130

TWIST TUBE LIFT CHILD PROOF CAP AND CONTAINER

Jack Weinstein, Manchester Township, Ocean County, N.J., assignor to Primary Delivery Systems, Inc., Easton, Pa.

Filed Jul. 17, 1990, Ser. No. 552,470
Int. Cl.[5] B65D *50/04*
U.S. Cl. 215—225 **7 Claims**



1. A child resistant container and lid, comprising:

(a) a container having a substantially cylindrical, vertical wall, an open top and a closed bottom, a ring track formed on a wall of said container near the top of said container, said ring track adapted to receive and act as a guide for a ring, said ring track having first stop component;

(b) a snap lid hingeably attached to the top of said container and substantially located inside the top of said container with the top of said lid at or near the top of said container when said lid is closed, said lid having one component of an extended lift member and an indented lift guide, and being engageable with the other of said extended lift member and said indented lift guide; and,

(c) a ring which is semi-flexible and is rotatably connected to said ring track, said ring having a second stop component which is located to be coincidental with said first stop component when said ring is rotated within said track, and to stop further rotation when said first stop and second stop contact one another, said ring further having the other component of said extended lift member and said indented lift guide, said ring being squeezable and rotatable such that simultaneous squeezing and rotating of said ring engages said extended lift member with said indented lift guide so as to unfasten and lift open said lid, and such that when said ring is not squeezed, said extended lift member and said indented lift guide are not engaged.

5,082,131

DISK-SHAPED HOUSING APPARATUS FOR RECEIVING DATA STORAGE DEVICES

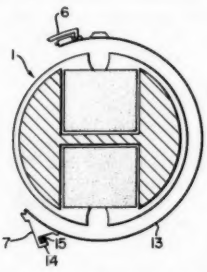
Michael M. Rauh, City Island, and Eugene H. Worrell, Staten Island, both of N.Y., assignors to Nynex Corporation, New York, N.Y.

Filed Aug. 28, 1990, Ser. No. 573,997
Int. Cl.[5] B65D *6/02*
U.S. Cl. 220—4.21 **11 Claims**

1. A housing apparatus adapted to receive a data storage device, the housing apparatus further adapted to be stored and retrieved in a facility configured to handle magnetic tape-type reels, the housing apparatus comprising:

a disk-shaped body having a diameter and a thickness which are approximately the same as the diameter and thickness, respectively, of a magnetic tape-type reel, said disk-shaped body having at least one cavity, each said cavity of said disk-shaped body having an extent which is less than that which would encircle the disk-shaped body, and an opening into said cavity for receiving a data storage device, said disk-shaped body comprising: a first exterior plate and a first interior member affixed to said first exterior plate, said first interior member having a first cutout section; a second exterior plate and a second interior

member affixed to said second exterior member, said second interior plate having a second cutout section; said



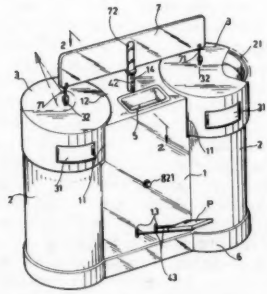
first and second interior members being arranged in abutting relationship and having their first and second cutout sections aligned to form a cavity.

5,082,132

SANITARY TRASH BIN

Wei C. Tsai, Room 5, 2F, No. 80, Ho Ping West Road, Sec. 2, Taipei, Taiwan

Filed Dec. 15, 1989, Ser. No. 450,999
Int. Cl.[5] B65F *1/16*; B65D *43/26*
U.S. Cl. 220—23.83 **12 Claims**



1. A double barrel-type trash bin, comprising:

a substantially box-like main housing having end faces at opposite ends conforming to the shape of side faces of barrels and side faces extending between said end faces;

a pair of barrels disposed adjacent the two ends of said main housing, said barrels having upwardly facing openings in the top side and having side faces against said end faces;

a pair of barrel lids placed over the respective upwardly facing openings of said barrels and having depending walls extending in sliding relation down over the side face of the corresponding barrel and said depending walls each having a throw-in opening therein; and

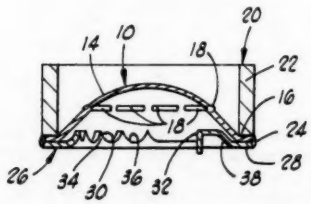
a lid operating mechanism for lifting said lids from said barrels and having a lid lifting rod means mounted in said housing and guided for vertical movement therein and having an upper end projecting out of the top of said housing, a cross-arm having the middle thereof supported on the upper end of said lid lifting rod and having said barrel lids suspended from end portions of said cross-arm, rod lifting means extending laterally out of a side face of said housing and articulated to said lid lifting rod means for raising said lid lifting rod means upwardly to lift said lids from said barrels, and stop means movable into and out of engagement with said lid lifting rod means for blocking lowering of said lids when said rod lifting means is no longer actuated.

5,082,133

LOW PRESSURE RUPTURE DISK AND ASSEMBLY

Stephen R. Farwell, Owasso, and Arnold L. Mundt, Tulsa, both of Okla., assignors to BS&B Safety Systems, Inc., Tulsa, Okla.

Filed Aug. 1, 1991, Ser. No. 739,303
Int. Cl.[5] F16K *17/16*
U.S. Cl. 220—89.2 **20 Claims**



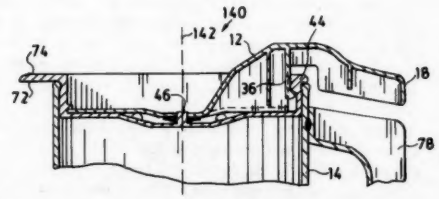
1. An improved low pressure reverse buckling rupture disk comprising a concave-convex rupturable member having a thickness and a configuration such that said member reverses when a predetermined fluid pressure is exerted on the convex side thereof and having one or more reinforcing embossments disposed therein.

5,082,134

SELF-SEALING CLOSURE

Douglas P. Ramsey, 20 Ellington Cir., Rochester, N.Y. 14612

Continuation-in-part of Ser. No. 619,056, Nov. 28, 1990, Pat. No. 5,036,993. This application Feb. 19, 1991, Ser. No. 657,654
Int. Cl.[5] B65D *41/26*
U.S. Cl. 220—711 **9 Claims**



1. A self-sealing closure for sealing a receptacle, said closure having a central axis and comprising a lid having a depressed area and at least one orifice within the depressed area, a shutter matching said orifice which is comprised of a horizontally extending lever, means for removably attaching said shutter to the top surface of said lid, and means for holding the shutter against said orifice, wherein:

(a) said shutter is normally in a closed position in which the passage of fluid through it is prevented,

(b) said shutter can be moved from its closed position to an open position by the application of an external force applied to said lever in a direction substantially parallel to said central axis of the shutter,

(c) when said external force ceases to be applied to the shutter, the shutter spontaneously returns to its closed position,

(d) said closure is comprised of means for preventing the shutter from rotating about said central axis to open said orifice,

(e) said lid is comprised of a horizontally-extending guide slot which is integrally formed as part of said lid, and

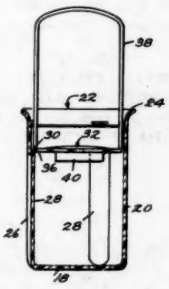
(f) said shutter moving from its closed position and spontaneously returning to its closed position in a direction substantially parallel to said central axis.

5,082,135

CONTAINER FOR STORING AND DISPENSING GOODS

Pieter K. J. DeCoster, Aalst, Belgium, assignor to Dart Industries Inc., Deerfield, Ill.

Filed May 8, 1990, Ser. No. 520,562
Int. Cl.[5] B65D *25/10*
U.S. Cl. 220—93 10 Claims



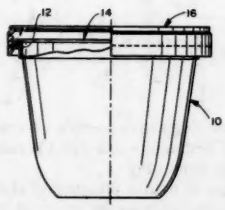
1. A combined storage and dispensing container for goods comprising a receptacle including a vertically extending cylindrical wall, a closed bottom and an open top, said peripheral wall and bottom defining a receptacle interior, an insert vertically slidable within said receptacle interior, said insert including a tray and handle means affixed to and extending vertically from said tray, said tray, in response to vertical sliding of said insert, being movable between said bottom and said open top, shoulder means on said wall inwardly directed into said receptacle interior and in vertically spaced relation above said bottom and approximately ¼ to ½ of the height of said receptacle below said open top, guide ribs on said wall and projecting into the interior of said receptacle, said ribs extending vertically from the bottom of said receptacle and terminating in upper ends defining said shoulder means, said tray including recesses therein receiving said ribs for guided movement of the tray vertically along the ribs, said tray being selectively movable between a first stored position received on and supported by said bottom, and a second dispensing position received on and supported by said shoulder means in vertically spaced relation above said bottom and in vertically spaced relation substantially below said open top with said cylindrical wall extending vertically above said tray and defining a substantially constant cross-section for said receptacle interior from said tray to said open top for containment of tray-supported goods, said tray, above said shoulder means and within said cylindrical wall, being rotatable relative to said receptacle for supporting engagement of said tray on said shoulder means.

5,082,136

CONTAINER AND CAP CONSTRUCTION

Ronald C. Schumann, West Chicago, Ill., assignor to Enviro-Packaging Corp., St. Charles, Ill.

Filed Feb. 6, 1991, Ser. No. 651,307
Int. Cl.[5] B65D *17/44, 51/22*
U.S. Cl. 220—278 19 Claims



1. A container and cap comprising a container having an access opening with an edge of circular shape of a particular inside diameter;

a cap for said opening;

means on said cap and said container for removably holding said cap on said container to occlude said access opening;

a membrane or foil-like seal bonded to said container about said access opening and free of said cap; and

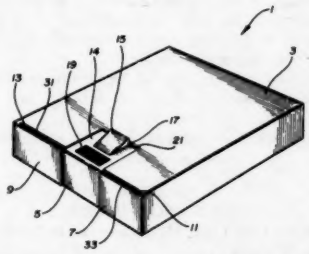
at least one cutting tooth having radially inner and outer sides and carried by said cap and displaced from a rotation point on said cap about which said cap may be rotated relative to said access opening a distance equal to or slightly more than one-half of said particular diameter and having at least two converging, sharp edges, and at least one piercing point between said sharp edges so that said point may pierce said seal and rotation of said cap relative to said access opening may cause at least one of said sharp edges to cooperate with said access opening edge to provide a scissors-like cutting action on said seal.

5,082,137

CHILD RESISTANT SLIDE BOX

Jack Weinstein, Manchester Township, Ocean County, N.J., assignor to Primary Delivery Systems, Inc., Flemington, N.J.

Filed Sep. 21, 1990, Ser. No. 641,383
Int. Cl.[5] B65D *43/20*
U.S. Cl. 220—346 17 Claims



1. A child resistant container comprising in combination:

(a) a drawer having a substantially planar drawer bottom, a drawer forward wall member, a drawer rear wall member, and oppositely disposed drawer side wall members;

(b) a cover having a substantially planar top with a predetermined width, having depending oppositely disposed cover side wall members and at least one cover forward wall member and an open rear edge, said at least one cover forward wall member not traversing the full width of said planar top, an area wherein said cover planar top terminates with an open edge;

(c) a stop means depending from said cover for engagement with said drawer rear wall member to limit the relative sliding movement therebetween;

(d) a releasable locking means extending from said drawer forward wall member toward said drawer rear wall member, said locking means engaging and overlapping said open edge of said cover planar top; and,

(e) interengaging slide means on said cover side wall members and said drawer side wall members.

5,082,138

FIRE RESISTANT TANK CONSTRUCTION

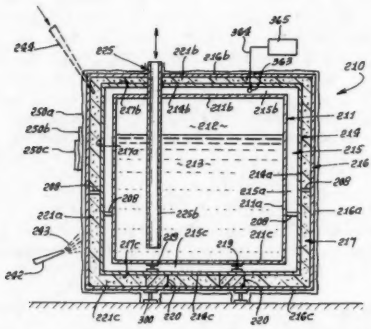
David C. McGarvey, San Gabriel, Calif., assignor to LRS, Inc., South El Monte, Calif.

Continuation of Ser. No. 509,142, Apr. 16, 1990, Pat. No. 4,989,750. This application Jan. 31, 1991, Ser. No. 648,969
The portion of the term of this patent subsequent to Feb. 5, 2008, has been disclaimed.
Int. Cl.[5] B65D *90/04*
U.S. Cl. 220—444 34 Claims

1. In fire resistant tank apparatus adapted for transportation

and for installation above-ground to receive and dispense a liquid hydrocarbon or hydrocarbons, or the like, the combination comprising

a) a tank assembly having lightweight wall means defining inner wall means, intermediate wall means and outer wall means, there being primary space between the intermediate wall means and the inner wall means, and secondary space between the intermediate wall means and the outer wall means,



b) first means on the assembly defining access porting to a tank interior defined by the assembly,

c) a bottom wall defined by the assembly to support the assembly at an installation site,

d) and thermal barrier material located in one of said first and second spaces to effectively define a shell about said tank interior,

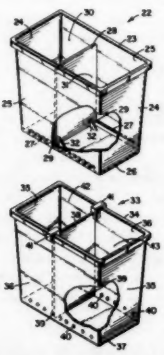
e) said tank assembly being horizontally elongated.

5,082,139

WASTEBASKET DIVIDER

Roger C. Quam, Gem Lake, Minn., assignor to Waste-Not, Inc., Willernie, Minn.

Division of Ser. No. 325,681, Mar. 20, 1989, Pat. No. 4,976,375.
This application Sep. 25, 1990, Ser. No. 587,734
Int. Cl.[5] B65D *25/06*
U.S. Cl. 220—530 **4 Claims**



1. A wastebasket apparatus, comprising:

(a) a framework including a bottom wall and longitudinal side walls so as to form an enclosure;

(b) a divider wall within said enclosure, the divider wall having an upper end and an opposite bottom end interconnected to the sidewalls, multiple compartments being defined by said divider wall and said side walls, said divider wall having a pair of pins proximate the bottom end thereof, wherein movement of said upper end of said divider wall in a first direction allows an upper end of said first compartment to be closed off, and movement of said upper end of said divider wall in a second direction allows an upper end of said second compartment to be closed off; and

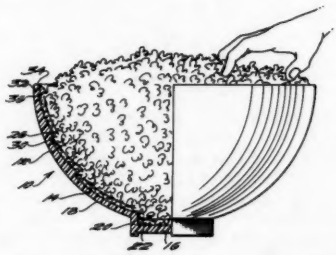
(c) means for adjusting the position of said divider wall, the adjustment means comprising a pair of opposite longitudinal grooves formed within an opposite pair of said side walls, said longitudinal grooves accommodating said pins.

5,082,140

BOWL FOR SERVING POPCORN AND THE LIKE

Julius A. Swenson, 4209 Sandwood Dr., Columbia, S.C. 29206

Filed May 30, 1990, Ser. No. 530,831
Int. Cl.[5] A47J *43/00*
U.S. Cl. 220—669 **4 Claims**



1. A device for serving popped corn and the like, comprising:

a bowl having a generally concave interior surface; and

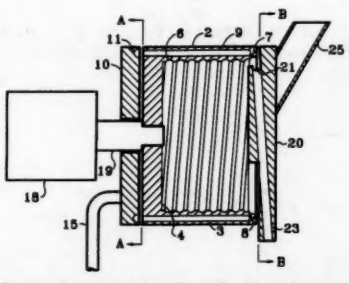
at least two generally circumferential ridges carried by said interior surface of said bowl, said at least two ridges having faces generally perpendicular to said interior surface for engaging said popped corn and resisting tangential movement of said popped corn along said interior surface, said faces being at least one-third the height of a popped kernel of corn.

5,082,141

DEVICE FOR SINGULATING PARTICLES

Charles R. Martin; Robert Rousser, and Daniel L. Brabec, all of Manhattan, Kans., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 3, 1990, Ser. No. 519,195
Int. Cl.[5] B65G *59/00*
U.S. Cl. 221—278 **4 Claims**



1. A feeder for singulating kernels of grain or grain-like materials and for feeding the singulated kernels to a predetermined destination comprising:

a drum adapted to hold a plurality of the kernels and to rotate horizontally about its axis and having an inner surface defining the interior of the drum and an outer

surface, wherein the inner surface has a spiral groove extending at least a portion of the length of the inner surface and terminating in a concentric groove near one end of the drum;

at least one orifice in the concentric groove having a dimension substantially smaller than one of the kernels;

a means for applying a vacuum to the orifice from a vacuum source during the time that the orifice rotates in a circular path from a first predetermined position which is below the axis of the drum to a second predetermined position which is above the first position, where by said vacuum source is positioned exterior to the drum and is in communication with the interior of the drum only through the orifice, and whereby a single kernel positioned over the orifice during the time the vacuum is applied will be retained over the orifice;

means for releasing the vacuum when the orifice is positioned at a third predetermined position which is above the first position, whereby the single kernel will be released from the orifice;

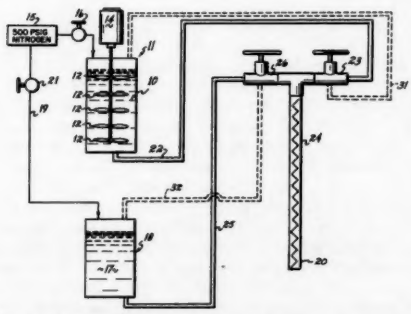
means for directing the released kernel to the predetermined destination.

5,082,142

METHOD AND APPARATUS FOR APPLYING NON-CHEMICALLY FOAMED MULTI-COMPONENT CURABLE POLYMERS

Laurence B. Saidman, Westlake, and James C. Smith, Lorain, both of Ohio, assignors to Nordson Corporation, Cleveland, Ohio

Filed Aug. 4, 1989, Ser. No. 389,640
Int. Cl.[5] B01F *3/04*
U.S. Cl. 222—1 **11 Claims**



1. A method of dispensing a foamable two-component thermosetting polymer composition comprising

providing a supply of a first component of said two-component thermosetting polymer containing a gas foaming agent under pressure in solution;

providing a second source of supply for a second component of said two-component thermosetting polymer system without a foaming agent, and

mixing said first component with said second component from said sources in-line at a dispensing head for dispensing at atmospheric pressure the thermosetting foam mixture.

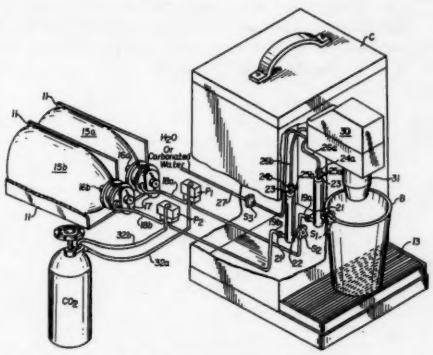
5,082,143

AUTOMATIC CONTROL SYSTEM FOR ACCURATELY DISPENSING MIXED DRINKS

William L. Schramm, Jr., 5984 Steubenville Pike, McKees Rocks, Pa. 15136

Filed Jun. 6, 1990, Ser. No. 534,167
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—66 **8 Claims**

1. An improved beverage system for mixing liquid ingredients including water in such a manner as to always assure a desired suitable proportioning of the ingredients in a beverage being dispensed which comprises, individual sources for each ingredient, a mixing chamber, individual valve means for controlling feed of each ingredient into said mixing chamber, means connecting each of said sources to its valve means, means actuated by an exhausting of any one of said sources of its ingredients for simultaneously closing all of said valve means, pump means for said connecting means to withdraw ingredients from their said sources and for then moving each ingredient under positive fluid pressure to its said valve means, a pressure sensitive electric switch connected to each of said connecting means, each said valve means has an electrically energized solenoid for when energized to hold said valve means in an open position, a source of electric current con-



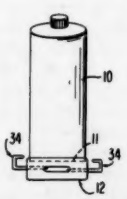
nected through each of said switches to an associated one of said solenoids, each of said switches being constructed to move to an open position when positive fluid pressure in any one of said connecting means decreases due to the exhaust of an associated one of said sources of ingredients, said switches being electrically connected in such a manner with respect to each other and with respect to said solenoids as to de-energize all of said solenoids when any one of said switches is moved to an open position, and regulator means operatively connected between each said switch and an associated said valve means for controlling the amount of the ingredient being supplied to the associated said valve means to thus proportion the ingredient with respect to other of said ingredients being supplied to said mixing chamber.

5,082,144

RETAINER CLIP FOR FLEXIBLE TUBE

Clinton J. Sundstrom, 3376 Marisma, San Mateo, Calif. 94403

Continuation-in-part of Ser. No. 628,453, Dec. 17, 1990, abandoned. This application May 6, 1991, Ser. No. 695,954
Int. Cl.[5] B65D *35/32*
U.S. Cl. 222—99 **15 Claims**



1. A retainer clip for a flexible tube containing a pasty material comprising:

(a) a generally flat, substantially rectangular body which

comprises a top wall, a bottom wall, a front wall, a rear wall and a pair of side walls;

(b) a slot in said front wall extending throughout the length thereof;

(c) a longitudinal opening in said bottom wall;

(d) an aperture in the central portion of each of said side walls for insertion of a support means;

(e) a pair of support means snugly inserted in each of said apertures, each of said support means including a longitudinal groove disposed off-center thereof;

(f) a rotatable holder disposed on each side of said side walls, each of said holders being adapted to be slidably movable in said grooves in the spacing between said top wall and said bottom wall;

(g) each of said holders comprising an elongated rod with a curved projection at an inner end thereof and a loop at an outer end thereof, said loop projecting outwardly of said body and being adapted for holding a plurality of substantially flat layers of the folded tube.

5,082,145

WINE CASK RESTRAINING ACCESSORY

William J. McDonald, 35 Neilsen Crescent, Bundoura, Victoria 3083, Australia

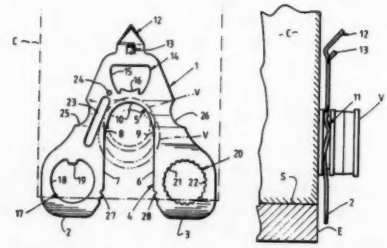
PCT No. PCT/AU88/00503, § 371 Date Aug. 15, 1990, § 102(e) Date Aug. 15, 1990, PCT Pub. No. WO89/06627, PCT Pub. Date Jul. 27, 1989

PCT Filed Dec. 30, 1988, Ser. No. 566,368

Claims priority, application Australia, Jan. 13, 1988, PI6286

Int. Cl.[5] B65D *25/00*

U.S. Cl. 222—105 **8 Claims**



1. In combination, a restraining device and a liquid containing cask including an outer container and an inner liquid containing member having a dispensing valve which in use projects through an opening in said outer container, said restraining device having a first portion formed with means which in use engages the dispensing valve of said cask to inhibit withdrawal of said valve into said outer container, and one or more second portions which extend from said first portion and having dimensions which in use position said second portion or portions below the bottom of the outer container when said first portion is engaged with said dispensing valve, whereby said second portion or portions can engage the edge of a supporting surface for the bottom of the outer container to prevent movement of the cask with respect to the supporting surface in at least one direction.

5,082,146

CONTAINER FOR MIXING AND EJECTION OF TWO COMPONENTS CONTAINED THEREWITHIN

Jean Hardt, Benken, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

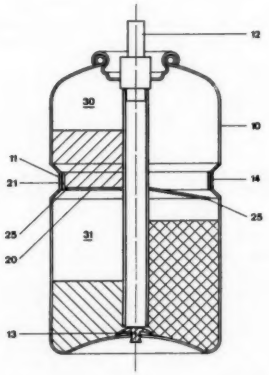
PCT No. PCT/CH89/00074, § 371 Date Dec. 22, 1989, § 102(e) Date Dec. 22, 1989, PCT Pub. No. WO89/10880, PCT Pub. Date Nov. 16, 1989

PCT Filed Apr. 24, 1989, Ser. No. 455,398

Claims priority, application Switzerland, May 3, 1988, 1652/88

Int. Cl.[5] B65D *83/00*

U.S. Cl. 222—135 **6 Claims**



1. Container for one-time use for mixing and ejecting two components contained therewithin, which comprises: a pressurized container having an inner wall, a pot-shaped membrane situated inside the container bonded adhesively with a ring-shaped seal to the inner wall of the container dividing the container into two chambers, two components separately residing in said two chambers, an outlet valve communicating with the interior of the container, wherein the membrane in the interior of the container is sealed tightly to the inside of the container and designed such that by the introduction of pressure difference in the two chambers a force is created that opens the membrane with the pressure difference opening the membrane by peeling the part of the membrane in contact with the inner wall of the container, whereby the components of one chamber can gain access to the components of the other chamber.

5,082,147

COMPOSITION DISPENSING SYSTEM

Richard Jacobs, 3831 San Felipe Ave., Newbury Park, Calif. 91230

Division of Ser. No. 161,908, Feb. 29, 1988, Pat. No. 4,869,500. This application Sep. 25, 1989, Ser. No. 411,695

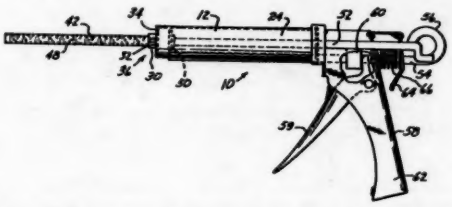
The portion of the term of this patent subsequent to Sep. 26, 2006, has been disclaimed.

Int. Cl.[5] B67D *5/52*

U.S. Cl. 222—137 **13 Claims**

1. Applicator for dispensing a chemical composition having low viscosity first and second sides provided in separate elongated first and second chambers, said applicator a handle, a trigger actuated rod advancement means, a center comprising rod advanced by said advancement means relative to said handle, side rods and pistons thereon arranged for simultaneous advancement with said center rod in simultaneous displacing relation of each of said first and second composition sides from said first and second chambers in reactive properties including a pair of pistons mounted to be driven simultaneously against both said composition sides, a common out-

ward passage from said first and second chambers for receiving said first and second composition sides adapted and arranged to repeatedly divide and recombine said sides until achievement of a homogeneous reaction mass, said passage being of a length relative to the rate at which said composition



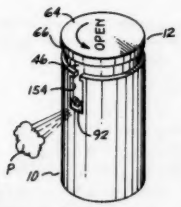
sides are driven from said chambers through said passage such that the dwell time of said composition in said passage such that said composition is a runny fluid reaction mass of relatively low viscosity easy to express from said applicator while in said common passage and a non-runny higher viscosity reaction mass immediately beyond said common passage.

5,082,148

POWDER DISPENSER

Walter B. Dunning, 924 Riesling Dr., Pleasanton, Calif. 94566

Filed Oct. 9, 1990, Ser. No. 595,257
Int. Cl.[5] B67D *5/64*
U.S. Cl. 222—162 **33 Claims**



1. A powder dispenser, comprising:

a powder reservoir;

a mixing chamber below the powder reservoir, separated from the powder reservoir by a first wall, said mixing chamber including a second wall below and axially spaced from the first wall, and a discharge passageway extending outwardly from the mixing chamber;

said first wall including a powder outlet bordered by a downwardly directed upper valve seat, and said second wall including an air inlet substantially coaxial with the powder outlet, said air inlet bordered by an upwardly directed lower valve seat;

an axially movable valve plug within the mixing chamber, said valve plug having upper and lower surfaces, said lower surface normally resting on the lower valve seat, with its upper surface spaced axially from the upper valve seat, providing a gap through which powder can flow from the powder reservoir into the mixing chamber; and

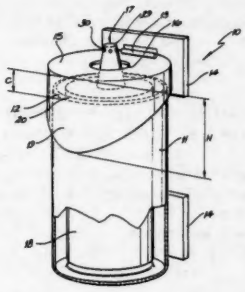
means to deliver air to and through the air inlet and against the lower surface of the valve plug, to move the valve plug upwardly to place the upper surface of the valve plug into seating engagement with the upper valve seat, and provide a gap between the lower surface of the valve plug and the lower valve seat, whereby air flows through said gap and into the mixing chamber and carries the powder out through the discharge passageway.

5,082,149

DISPENSER AND PUMP TYPE CONTAINERS

Kenneth M. Cross, Penshurst, Australia, assignor to 3C Chemical Labaratories Pty Ltd., Wales, Australia

Filed Sep. 6, 1990, Ser. No. 578,296
Claims priority, application Australia, Sep. 6, 1989, PJ6205
Int. Cl.[5] B05B *17/00*
U.S. Cl. 222—162 **12 Claims**



1. A dispenser for a pump-type container, comprising:

a case having at least one wall mounting bracket, a floor surrounded by upright side walls, and a first aperture formed in the case floor and adapted to receive a nozzle of a pump-type container;

a lid hinged to the case and having a peripheral skirt at least partially covering an upper portion of the case, the lid having a rest position and a depressed position, with a clearance being provided between the lid and the case when the lid is in the rest position; and

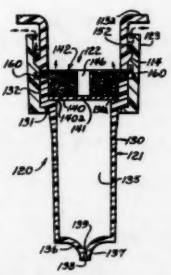
a second aperture formed in the lid and adapted to receive a nozzle of a pump-type container, such that the clearance between the lid and the case is sufficient to activate a pump mechanism of a pump bottle located within the case when the lid is depressed.

5,082,150

LIQUID DISPENSING SYSTEM INCLUDING A DISCHARGE ASSEMBLY PROVIDING A POSITIVE AIR FLOW CONDITION

Robert L. Steiner; Charles R. Holzner, Sr., both of Chicago, and Allen J. Voth, Oak Park, all of Ill., assignors to Steiner Company, Inc., Chicago, Ill.

Filed May 1, 1990, Ser. No. 517,244
Int. Cl.[5] B67D *5/58*
U.S. Cl. 222—189 **16 Claims**



1. A liquid dispenser comprising, an unvented liquid container having only an outlet opening, a discharge assembly in liquid communication with said liquid container outlet opening, said discharge assembly including discharge means defining a discharge chamber for accommodating a charge of liquid and an inlet chamber for introducing liquid to said discharge chamber, and a check valve means in said inlet chamber for

regulating the flow of liquid from said container to said discharge chamber, said check valve means including a valve member and a semipermeable filter element mounted in and substantially filling said inlet chamber between said valve member and said liquid container outlet opening, said filter element being of a material which is permeable to air for establishing an air passage to introduce air into said liquid container upon withdrawal of liquid from said container, and said filter element material being impermeable to liquid, said element having an opening therethrough defining a passageway for liquid from said container outlet opening to said valve member for introduction into said discharge chamber.

5,082,151

METHOD AND APPARATUS FOR WINDING ROUND THE STEM OF A BUTTON SEWN ONTO AN ARTICLE OF CLOTHING

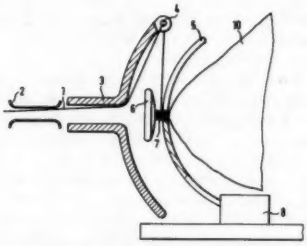
André J. Schaerer, Pfaffhausen, Switzerland, assignor to Allgemeine Synthetische Gesellschaft Etablissement

Filed Aug. 16, 1990, Ser. No. 568,369

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1989, 3927018; Feb. 16, 1990, 4004877; Jul. 10, 1990, 4021938

Int. Cl.[5] A41M *43/00*

U.S. Cl. 223—1 **13 Claims**



1. An apparatus for winding a thread around a button stem sewn by a sewing thread to an article of clothing comprising a winding bell rotatable about an axis for winding an elastomeric plastic material thread around and in the axial direction of the button stem, a winding bell drive motor having a axis with the drive motor spaced from said winding bell, said drive motor has a hollow shaft arranged for the winding thread to be passed therethrough to the winding bell, said hollow shaft having an axis, and a magazine having an axis and arranged for receiving a winding thread supply and arranged to supply the winding thread to the hollow shaft, and the winding bell, drive motor and hollow shaft and magazine, in combination, forming a hand-operated device.

5,082,152

GARMENT HANGER WITH ADJUSTABLE CLAMPING CROSSBAR

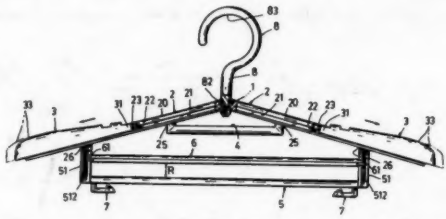
Shing-Huei Chen, c/o Hung Hsing Patent Service Center P. O. Box 55-1670, Taipei (10477), Taiwan

Filed Dec. 26, 1990, Ser. No. 634,075

Int. Cl.[5] A47A *25/48, 25/14*

U.S. Cl. 223—89 **1 Claim**

1. An adjustable garment hanger comprising: a central sleeve, two basic shoulder members bifurcated from the central sleeve protruding rightwardly and leftwardly from the central sleeve, a pair of extendible shoulder members respectively mounted on the two basic shoulder members, a U-shaped cross bar laterally secured between said two basic shoulder members having two vertical brackets formed on two opposite end portions of said U-shaped cross bar and a adjustable snap bar supported between said vertical brackets by rack and teeth means which includes a pair of bar clips resiliently formed on opposite ends of the snap bar, each of said bar clips having a pair of lower clamping teeth adjustably engageable with a plurality of rack teeth formed on the two vertical brackets wherein said lower clamping teeth adjustably engage said rack teeth and the snap bar can be adjusted to a desired vertical



position along the vertical brackets, said hanger further comprising a main hook member pivotally mounted in the central sleeve to be hung on a fixture.

5,082,153

GARMENT CLAMPING HANGER

Everett L. Duester; Russell O. Blanchard, both of Zeeland, and Harley Brower, Grandville, all of Mich., assignors to Batts, Inc., Zeeland, Mich.

Continuation of Ser. No. 128,205, Dec. 3, 1987, abandoned. This application Nov. 7, 1988, Ser. No. 276,761

The portion of the term of this patent subsequent to Apr. 21, 2006, has been disclaimed.

Int. Cl.[5] A47G *25/48, 25/14*

U.S. Cl. 223—96 **4 Claims**

3. A hanger having an elongated body member and a garment clamp, said clamp having a rear jaw and a front jaw, said jaws being of substantially the same length, said rear jaw being integral with said body member and said front jaw being hingedly joined to said rear jaw at its upper end, said front and rear jaws being elongated and each having a channel formed in its outer face, a resilient U-shaped closure member slidably seated in said channels and having a rear leg portion movable lengthwise of said channel in said rear jaw and a front leg portion movable lengthwise of the upper portion of said channel in said front jaw, said front leg portion extending a minor portion of the length of said channel in said channel in said front jaw; said channel in said front jaw being recessed into the front face of said front jaw and extending from its upper end substantially the full length of said front jaw and serving as a guide for a finger being moved upwardly lengthwise of said jaw toward said closure member; the lower portion of said front channel being narrower than a operator's finger but wide enough to receive a sufficient portion of the operator's finger to provide a positive guide therefor as it is moved upwardly toward said closure member, said channel from a point substantially midway between its lower end and the end of the front leg portion of said closure member progressively widening to a width which permits the operator's finger to progressively shift rearwardly into the channel to seat on the floor of the channel, said width of the upper portion of said channel being that of said closure member and thereafter maintaining said width to said hinged joinder of said jaws to positively guide the operator's finger both in upward movement as the closure is moved upwardly to release position; said rear jaw of said clamp being of uniform width throughout its length and

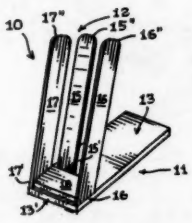
having an opening in and through said rear jaw extending from the lower end of said rear jaw up to and no more than approximately half the height thereof and below the end of said closure member when said closure member is seated in full clamp closure position, the sides of said opening being defined by a pair of depending spaced legs between which the lower portion of said front jaw can pass, said legs at their upper ends being joined by a cross bar defining the lower end of said channel in said rear jaw.

5,082,154

AID FOR PUTTING ON SOCKS

Renee J. French, R.R. 3, Box 155, Grafton, N. Dak. 58237

Filed Mar. 11, 1991, Ser. No. 666,946
Int. Cl.[5] A47G *25/90*
U.S. Cl. 223—112 **4 Claims**



1. An apparatus to assist an individual in donning an article of hosiery wherein the apparatus comprises:

a base unit including an elongated base member having a front and a rear;

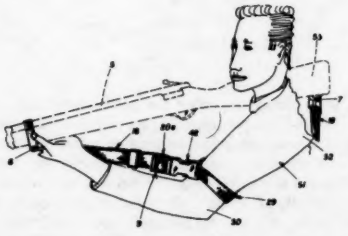
a hosiery support unit including a plurality of generally elongated thin flat support leg members including a rear support leg member and a pair of opposed side support leg members operatively attached to the base member proximate to said front wherein the longitudinal axis of said plurality of support leg members are disposed generally parallel to one another and are angled rearwardly relative to said front of the base member; wherein the lateral axis of at least one of said plurality of support leg members is disposed perpendicular to the lateral axis of one other of said plurality of support leg members.

5,082,155

SLING FOR SHOULDER-FIRED WEAPONS

Jerry A. Salvador, 300 Ortega St., San Francisco, Calif. 94122

Continuation-in-part of Ser. No. 400,515, Aug. 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 153,447, Feb. 8, 1988, abandoned. This application Sep. 20, 1990, Ser. No. 585,399
Int. Cl.[5] F41C *33/00*
U.S. Cl. 224—150 **20 Claims**



1. A sling for a shoulder fired weapon in which there are pre-adjustments to quickly accommodate both carrying and shooting modes of said weapon for an individual user, said weapon including a forward swivel and a rear swivel, comprising

a forward section having a first strap means, a forward fastener connected to said first strap means for attaching said forward section to a forward swivel of a weapon and one of a male and female quick coupler attached to said first strap means, said forward fastener providing relatively large numbers of adjustments in length of said forward section in a rapid manner to provide for a shooting mode for said weapon,

a rear section having a second strap means, a rear fastener for attaching said rear section to a rear swivel of said weapon and a complementary one of a female and male quick coupler attached adjacent to a second end thereof, said rear fastener providing for adjustments in length of said rear section to provide a carrying mode for said weapon,

anchoring means attached to a user's body and including a third strap means as well as another complementary one of a female and male quick coupler attached to said third strap means and a loop adjustable fastener also attached to said third strap means, said loop adjustable fastener permitting change of length of said anchoring means in rapid manner,

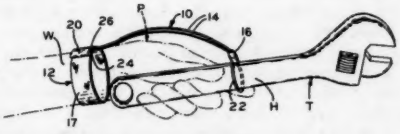
said complementary one of a male and female coupler and said another complementary one of a female and male quick coupler being substantially identical whereby said forward section can be disconnectably connected to said rear section defining said carrying mode of said weapon and can be disconnectably connected to said anchoring means to define said shooting mode of said weapon, wherein during said shooting mode said rear section falls away from a user of said weapon but remains attached to said rear swivel of said weapon.

5,082,156

TOOL WRIST STRAP

Thomas D. Braun, 6822 Lakecrest Ct., Fort Wayne, Ind. 46815

Filed Aug. 7, 1987, Ser. No. 83,580
Int. Cl.[5] A45F *3/14*
U.S. Cl. 224—220 **8 Claims**



1. A tool wrist strap, comprising:

a band of flexible substantially elastic material adapted to fit about a person's wrist;

a looped cord of flexible substantially inelastic material having a looped free end portion and an opposite end portion attached to said band;

wherein a predetermined pulling force on said cord causes said flexible elastic band to elongate;

a clench member slidable on said looped cord and producing sufficient friction therewith to hold said member in any given position along said cord, said member being movable in opposing directions away from and toward said looped free end portion of said cord for respectively untightening and tightening said looped end portion in a noose-like configuration about a portion of a tool;

said band is formed by an elongated strip of said flexible substantially elastic material having opposite ends;

one of said strip ends is doubled back on itself to form a pocket;

said opposite cord end portion is received in said pocket and secured to said doubled back one strip end to thereby anchor said cord thereto; and,

further comprising, a pair of patches, one of said patches on

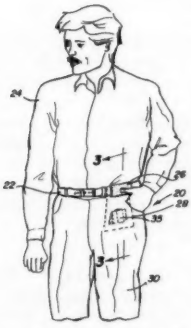
one side thereof having a pile fastening material and the other of said patches on one side thereof having a hook fastening material detachably attachable to said pile fastening material, one of said patches on an opposite side thereof being attached to said doubled back strip end and the other of said patches on an opposite side thereof being attached to the other of said strip ends, whereby said strip ends are attachable together to complete said and by pressing said patches at their respective one sides together and detachable from one another to open said band by applying sufficient pulling force to peel said one sides of said patches apart.

5,082,157

EASILY ACCESSIBLE CONCEALED POCKET

Marla Emerson-Santos, 46222 Fonner Ct. West, Northville, Mich. 48107

Filed Jan. 3, 1991, Ser. No. 637,187
Int. Cl.[5] A45C *1/04;* **A45F** *5/00*
U.S. Cl. 224—229 **6 Claims**



1. A security pocket combination comprising:

a pocket defined by a polygonal inner member having side edges and a polygonal outer member having side edges, said inner and outer members being secured to each other at all but one of said side edges to form a pocket, said unsecured edges defining a pocket opening said outer member further having an extension beyond said unsecured side edge of said outer member and being folded over and secured to an outer face of said extension facing away from said inner member to define a belt loop, said belt loop further being in overlapping relation with said outer member;

a belt having inner and outer surfaces and formed of an elongate member having ends secured to each other to define a continuous member for supporting an article of clothing, said belt received in said belt loop with said inner surface facing said pocket whereby said belt and said unsecured edges are in side-by-side relationship, such that said belt biases said unsecured edge of said outer member towards said unsecured edge of said inner member to provide a resilient closure.

5,082,158

ARTICLE CARRIER

John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236

Continuation of Ser. No. 246,771, Sep. 20, 1988, abandoned. This application Jun. 20, 1990, Ser. No. 540,879
Int. Cl.[5] B60R *9/00*
U.S. Cl. 224—321 **16 Claims**

1. An article carrier for an automobile comprising:

a plurality of slats fixedly secured on a generally horizontally extending exterior automobile body surface;

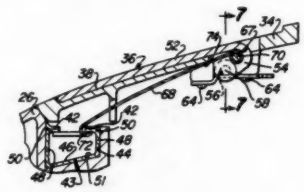
said slats extending generally longitudinally of the automobile;

a plurality of selected said slats having an upper article supporting surface;

said supporting surfaces being located between the body surface and the lower side of articles on said carrier;

a pair of bracket members disposed upon said selected slats and a restraining bar extending laterally between and secured adjacent its opposite ends to said bracket members;

means on each of said bracket members and cooperable with one of said selected slats for detachably securing and longitudinally adjusting said bracket members and said restraining bar at infinite positions along said slats;



said means comprising a locking member being manually rotatable in a direction transverse to said slat between a closed and an open position for locking and unlocking said bracket member at a position along said slat;

rotating means for allowing said locking member to rotate between said open and closed positions; and

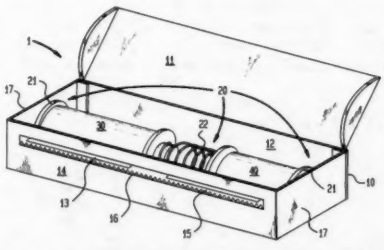
an elongated spring member operatively connected to said locking member and extending transversely to said slat for movement as said locking member is rotated for engaging and disengaging said slat, said spring member being operable to flex to enable a portion thereof to abuttingly engage a shoulder portion of said bracket member to thereby further tension said bracket member in releasably locking engagement with said slat.

5,082,159

SUBSTANDARD SIZE FOOD WRAP DISPENSER

Concetta M. Gutierrez, 23 Royal Oak Rd., Lawrenceville, N.J. 08648

Filed Feb. 12, 1990, Ser. No. 478,960
Int. Cl.[5] B65H *75/28;* **B26F** *3/02*
U.S. Cl. 225—34 **1 Claim**



1. A food wrap dispenser for substandard size widths of household food wrap comprising a quadrilateral carton having a serrated tearing edge and at least one roll divider disposed within said carton to separate substandard size rolls of food wrap wherein said roll divider comprises roll attachment end members fixedly attached to the inside portion of the side walls of said carton and an intermediate roll attachment member disposed between said rolls of food wrap, each of said roll attachment end members comprising a disc-shaped base member having an inward side and having an integrally formed annular ring protrusion disposed to the inward side of said base

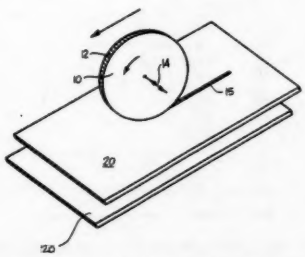
member, said protrusion being provided for attachment of an end of the respective rolls of food wrap in rotatable engagement, said intermediate roll attachment member comprising a pair of divider attachment members and an outwardly-biased spring disposed between said divider attachment members, said spring being fixedly attached at its ends to the respective divider attachment members, each of said divider attachment members including a central disc having an integrally formed annular ring protrusion disposed to one side of said central disc and an integrally formed spring attachment protrusion disposed to the opposite side of said central disc, and spring attachment protrusion including a spring attachment orifice for receipt of a bent end of said spring.

5,082,160

APPARATUS AND PROCESS FOR ULTRASONIC SEAM WELDING STAINLESS STEEL FOILS

Richard W. Leigh, New York, N.Y., assignor to Gas Research Institute, Chicago, Ill.

Filed Jan. 10, 1990, Ser. No. 463,323
Int. Cl.[5] B23K *20/10*
U.S. Cl. 228—110 **28 Claims**



1. In an ultrasonic seam welding apparatus having a head, head displacement means for rotating the head and forming contact between a contacting surface of the head and an outside foil of a plurality of layered foils, vibration means for vibrating the head at an ultrasonic frequency, the head constructed to transmit vibration through the contacting surface of the head into each of the layered foils, the improvement comprising: said head being constructed of a ferrous material; and a metallurgically inert coating fixedly surrounding the contacting surface of the head so as to prevent contact between said head and said outside foil.

5,082,161

METHOD OF JOINING CERAMICS AND METAL WITH TI-CO BRAZE AND NI

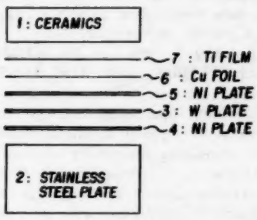
Sirou Utida, Hiratuka, and Tosio Narita, 9-7-8, 1-jou, Sinkotoni, Kita-ku, Sapporo-shi, both of Japan, assignors to Isuzu Jidosha Kabushiki Kaisha, Tokyo and Tosio Narita, Sapporo, both of, Japan

Filed Nov. 9, 1990, Ser. No. 611,011
Claims priority, application Japan, Nov. 30, 1989, 1-313222
Int. Cl.[5] B23K *35/30*
U.S. Cl. 228—122 **11 Claims**

1. A material for joining ceramics and a metal plate comprising,

a titanium-copper braze disposed adjacent to the ceramics, and

a stress cushioning and brazing material disposed between the titanium-copper braze and the metal plate, said stress cushioning and brazing material being formed of a first nickel plate and operating as a part of the braze for the



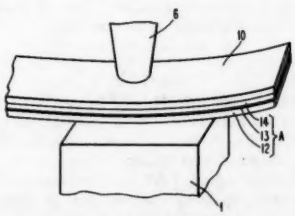
adjacent titanium-copper braze as well as a stress cushioning material.

5,082,162

METHODS FOR SOLDERING SEMICONDUCTOR DEVICES

Satoshi Kamiyama, Kawanishi, and Kiyoshi Ohnaka, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 5, 1991, Ser. No. 650,695
Claims priority, application Japan, Feb. 5, 1990, 2-26463
Int. Cl.[5] B23K *35/22, 1/002*
U.S. Cl. 228—123 **3 Claims**



1. A semiconductor-device soldering method comprising:

placing a surface of a soldering material comprising, an indium-containing metal layer formed on a tetrafluorethylene-ethylene copolymer film, against a metal base;

transferring said metal layer of the soldering material onto said metal base by applying a pressure on the reverse side of said film by means of a pressure applying tool; and

a pressure on the reverse side of said film by means of a pressure applying tool; and

metal base by means of said transferred metal layer.

5,082,163

METHOD OF METALLIZING NON-OXIDE CERAMICS

Naoyuki Kanahara, Akigawa, and Tetsuo Furihata, Higashiyamato, both of Japan, assignors to Dowa Mining Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1989, Ser. No. 451,299
Claims priority, application Japan, Mar. 1, 1989, 64-46597
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—124 **12 Claims**

1. A method of metallizing a non-oxide ceramic material comprising heating the non-oxide ceramic material placed either in contact with or in close proximity to tough-pitch copper containing 200–400 ppm of oxygen in the form of Cu_2O in vacuum, in nitrogen or in argon, each containing a small amount of oxygen whose oxygen partial pressure is in the range of 10–500 ppm at a temperature of 1,000° C. or higher but lower than the eutectic point of Cu and Cu_2O, so as to dissociate at least part of the copper oxide in the copper, thereby metallizing the surface of said non-oxide ceramic material with copper.

5,082,164

METHOD OF FORMING SUPERCONDUCTING JOINT BETWEEN SUPERCONDUCTING TAPES

Lee E. Rumaner, Schenectady; Mark G. Benz, Burnt Hills, and Bruce A. Knudsen, Amsterdam, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 1, 1990, Ser. No. 561,439
Int. Cl.[5] H01R *43/02*; B23K *31/02*
U.S. Cl. 228—176 **5 Claims**

1. Method for joining superconducting tapes having an inner laminate comprised of a parent-metal layer selected from a group of metals consisting essentially of niobium, tantalum, technetium, and vanadium, at least one superconductive alloy layer on the parent-metal layer, and at least one reactive-metal layer that is capable of combining with the parent-metal and forming the superconductive alloy, an outer laminate bonded to both sides of the inner laminate, the outer laminate being a non-superconductive metal having a coefficient of thermal expansion greater than that of the inner laminate, the method comprising:

removing the outer laminate, reactive-metal layer, and superconductive alloy layer from at least one surface of a section of at least two tapes to form exposed sections, and positioning the tapes so that the exposed sections are in contact;

joining the exposed sections to form at least one bridge of the parent-metal between the parent-metal layers; and

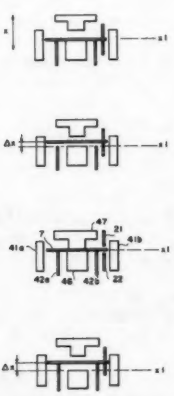
heating the joined exposed sections in a protective atmosphere, and in the presence of excess reactive-metal to form a continuous layer of the superconductive alloy on the bridge and exposed sections that is continuous with the superconductive alloy on the tape.

5,082,165

DEVICE FOR FORWARDING SEMICONDUCTOR LEAD FRAMES AND METHOD OF OPERATING THE SAME

Masahiro Ishizuka, Fukuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Apr. 4, 1990, Ser. No. 504,008
Claims priority, application Japan, Jul. 28, 1989, 1-194002
Int. Cl.[5] H01L *21/58*
U.S. Cl. 228—179 **14 Claims**



13. A method of forwarding lead frames comprising:

(a) clamping a lead frame supported on a bottom guide rail means and lifting the lead frame a predetermined height with a clamp lifter means above the level of a heater surface of a heater means;

(b) translating the clamp lifter means in the lead frame forwarding direction by a predetermined length;

(c) lowering the clamped lead frame to the heater surface and releasing the clamp;

(d) returning the released clamp lifter means to the clamp position of step (a) before lifting: and

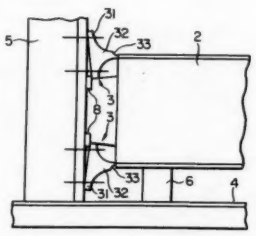
(e) performing an assembly process on a semiconductor pellet carried on a portion of the lead frame positioned above the heater surface.

5,082,166

CONNECTOR BEAM JOINING METHOD

Hideshige Matsuo, Kitakyushu; Isamu Yamamoto, Kitakyushu; Michio Itoh, Kitakyushu; Kuniaki Sato, Hiratsuka; Yoshihiro Nakamura, Tama; Akia Tomita, Tokyo, and Yoshiki Mihara, Tokyo, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Continuation of Ser. No. 508,245, Apr. 11, 1990, abandoned, which is a continuation of Ser. No. 266,564, Nov. 3, 1988, abandoned. This application Dec. 21, 1990, Ser. No. 632,592
Claims priority, application Japan, Nov. 17, 1987, 62-175720; Feb. 12, 1988, 63-30535
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—189 **3 Claims**



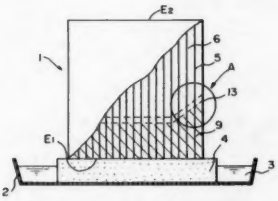
1. A welding kit for connecting a beam having an H-shaped cross section including horizontal flanges having planar welding surfaces connected by a web, to a beam which allows for contraction of a weld bead comprising: a connectro piece having a base plate, a first extension extending from said base plate and being normal to said base plate and terminating at a first edge, said first edge having a mid point and being parallel to said base plate; a second extension extending from said base plate and being normal to said base plate and othogonal to said first extension, said second extension being on one side of said first extension and abutting said first extension at said mid point and defining a positioning side; said connector having a connector welding surface being opposite said positioning side and having a concave vertical cross section said cross section being constant along an axis which is parallel to said first edge, said concave cross section terminating at said first edge and extending toward said base plate and away from said positioning side; a backing strip having an abutment edge being fastened to the horizontal flanges said abutment edge being coplanar with the flanges welding surfaces, said connector piece first edge abutting said backing strip abutment edge, a vertical cross sectional gradient being defined between the flange welding surfaces and the connector welding surface, a shrinkage gradient determined from the vertical cross sectional gradient and the weld bead shrinkage characteristics, an angle of rotation of said connector piece about said first edge determined from said shrinkage gradient, said second edge and said base plate forming an angle therebetween being substantially equivalent to said angle rotation such that the connector piece is placed in a pre-weld position defined by said second edge abutting the beam web and said connector piece rotating by an angle of rotation to a post-weld position in which the base plate is an a vertical position.

5,082,167

METHOD OF SOLDERING HONEYCOMB BODY

Yutaka Sadano; Yuuji Nakashima, both of Kimitsu; Takashi Tanaka, Sagamihara; Takatoshi Kawasaki, Tokyo; Shinji Shibata, Toyota; Hikaru Aoyagi, Tokyo; Yoshio Nishizawa, Tokyo, and Akihiko Kasahara, Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo; Toyota Jidosha Kabushiki Kaisha, Toyota and Nippon Kinzoku Co., Ltd., Tokyo, all of, Japan

Filed Sep. 17, 1990, Ser. No. 583,331
Int. Cl.[5] B23P *13/00*
U.S. Cl. 228—258 9 Claims



1. A method of soldering a honeycomb body, which comprises:

alternately piling and winding or laminating flat foils and corrugated foils to form a honeycomb body,

connecting the flat and corrugated foils by soldering contacting portions of the flat and corrugated foils,

immersing a binder liquid suck-up substrate member in the binder liquid so that the top face is exposed,

placing the honeycomb body on the suck-up substrate member to bring the end of the honeycomb body into contact with the top face of the suck-up substrate member to cause the binder liquid to rise along spaces defined by the contacting portions and to form binder streaks,

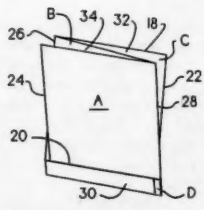
scattering and applying a solder to the binder streaks, and drying and heating the honeycomb body.

5,082,168

COMPARTMENTED ARTICLE RECEIVING DEVICE FOR HOLDING PHOTOGRAPHIC PROOFS AND NEGATIVES

Ralph R. Gaetano, Bethel Park, Pa., assignor to Think, Inc., Pittsburgh, Pa.

Filed Sep. 6, 1990, Ser. No. 578,737
Int. Cl.[5] B65D *27/08*
U.S. Cl. 229—72 6 Claims



1. An article receiving device comprising,

a portion of material having a generally rectangular configuration,

said material having a top edge, a bottom edge, a first side edge, a second side edge, a first face and second face,

a front flap portion formed by a first fold of said material adjacent said first side edge, said first fold of said material placing said front flap portion over said first face of said material,

a back flap portion formed by a second fold of said material adjacent said second side edge, said second fold of said material placing said back flap portion over said second face of said material,

an intermediate flap portion between said first fold and said second fold,

a bottom flap portion formed by a third fold of said material adjacent said bottom edge, said bottom edge of said folded material including a portion of said front flap portion adjacent said bottom edge of said material, a portion of said intermediate flap portion adjacent said bottom edge of said material, and a portion of said back portion adjacent said bottom edge of said material, said third fold of said material placing said bottom flap portion over said front flap portion,

a first pocket formed between said front flap portion, said intermediate flap portion, said first fold and said third fold,

said first pocket having an opening extending across said top edge of said material and downwardly along said first side edge of said material,

a second pocket formed between said back flap portion, said intermediate flap portion, said second fold and said third fold, and

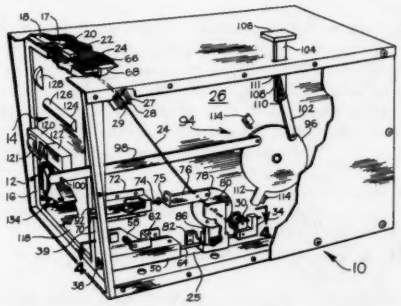
said second pocket having an opening extending across said top edge of said material and downwardly along said second side edge of said material.

5,082,169

TWO-DOOR, LOCKED MAILBOX

Harold O. Aurness, 5808 Knox Ave. North, Brookyln Center, Minn. 55430, and Thomas G. Mahler, 3841 Unity Ave. North, Robbinsdale, Minn. 55422

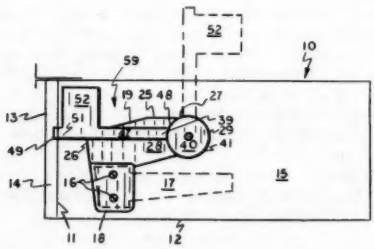
Filed Mar. 5, 1990, Ser. No. 487,833
Int. Cl.[5] B65D *91/00*
U.S. Cl. 232—17 7 Claims



1. A two-door mailbox unit comprising a box of generally rectangular shape having a bottom hinged delivery door at a front end, a second, receiver's door, side-hinged to and within a perimeter of the delivery door and lockable thereto; a mail slot in the second door featuring a delivery indicator; automatic locking means for the delivery door provided by spring-biased latch bolts at a side and top; a release plug in a side chamber of the box; a pivotal spring-biased latchgate covering the release plug in parallel spaced relation and containing the side latch bolt; a spring-biased cable release rod also in parallel relation to the release plug connected by an elbow to a latch cable leading through rollers to the top latch bolt of the unit; wherein the top and side latch bolts are simultaneously released by the action of a special release tool entering the side chamber onto the release plug to swing open the latch gate and side latch and contact and push the cable release rod; with the unit further comprising automatic signal means coupled to the cable release rod in the form of a finger-like signal extending out a front of the side chamber activated with unlatching of the delivery door to indicate a delivery; manual signal means to indicate a pick-up is to be made employing a vertically mounted rotatable disk in the side chamber which shows an

arm each out the top and side; brace hinges comprising brackets attached to a floor of the box and the delivery door connected by pivotal arms to hold the door horizontally open.

5,082,170
MAILBOX SIGNAL FLAG
D. Leroy Goss, 9811 Dacono Dr., Richmond, Va. 23228
Filed Jan. 24, 1991, Ser. No. 645,145
Int. Cl.[5] B65D *91/00*
U.S. Cl. 232—35 **5 Claims**



1. A device for automatically signaling the opening of a mailbox, said mailbox having a bottom panel and sidewall structure collectively defining an enclosure having a frontal opening, a door hingedly associated with the bottom panel and having a perimeter flange adapted to seal said frontal opening, and mounting holes in said sidewall structure intended for the bolted securement of conventional manually operable signal means, said device comprised of:

a) a stationary member of integral construction comprised of:

1) a spacer portion having an upper extremity, inner and outer surfaces, and a plurality of mounting apertures communicating between said surfaces and positioned as to be in coaxial alignment with said mounting holes,

2) a flat bracket portion having front and rear extremities and an outer surface that is coplanar with the inner surface of said spacer portion, said rear extremity upwardly disposed from said front extremity,

3) housing means of circular perimeter disposed upon the outer surface of said bracket portion adjacent the rear extremity thereof, and

4) first retaining means fixedly emplaced within said circular perimeter,

b) a signal member of integral construction comprised of:

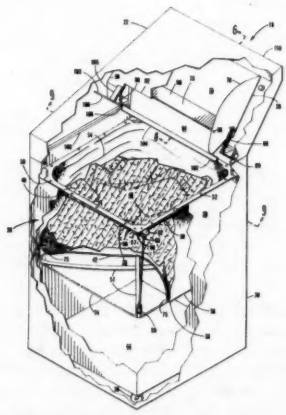
1) a disk portion of generally circular contour configured to pivotably engage said housing means with concomitant formation of centered axle means, said disk portion having fixedly emplaced second retaining means and limiting means for controlling the extent of rotation allowed by said pivotal engagement,

2) an arm portion radially emergent from said disk portion and terminating in a distal extremity which supports an enlarged rectangular panel portion, and

3) latch means associated with said distal extremity and adapted to engage the perimeter flange of the door of the mailbox, thereby maintaining said arm in horizontal disposition, and

c) torsional spring means having a plurality of coils wrapped around said axle means, a first extremity tangentially emergent from said coils and held by said first retaining means, and a second extremity tangentially emergent from said coils and held by said second retaining means, said spring maintained in a compressed disposition by said first and second retaining means and thereby forcing said arm to rotate to a vertical position upon release of said latch means from said perimeter flange.

5,082,171
BOOK RETURN WITH COLLAPSIBLE BAG RECEPTACLE
Randall J. Homel, and Jeffrey R. Swagel, both of Green Bay, Wis., assignors to Highsmith Company, Inc., Fort Atkinson, Wis.
Filed Jul. 30, 1990, Ser. No. 559,729
Int. Cl.[5] B65D *91/00*
U.S. Cl. 232—43.2 **20 Claims**



1. A book return comprising:

a) a casing defining a door compartment having a frontal access opening and a rear discharge opening;

b) a sector-shaped door having a book guide surface, the door being attached to the casing about a horizontally pivoted axis near the bottom of the casing between the frontal access opening and the rear discharge opening, the door being pivotally movable between closed and open positions;

c) a gate having a top which is horizontally pivotally attached at the gate top to the rear of the door, the gate covering the rear discharge opening;

d) a guide member extending from the bottom of the gate such that the guide member will be displaced upwardly by a book deposited in the door when the door is in a closed position;

e) an inner guide surface connected to the casing and spaced form the door and adapted to engage the guide member of the pivoted gate to restrict access past the gate when the door is opened; and

f) an outer guide surface connected to the casing opposite the inner guide surface, the outer guide surface engaging and constraining the upwardly displaced guide member of the gate as the door is pivoted to prevent the door from opening, such that the door will freely open when the gate is not displaced by a book but will be prevented from opening when the gate is so displaced.

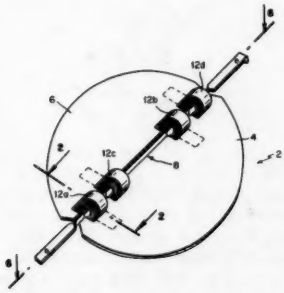
5,082,172
THERMALLY ACTIVATED VENT DAMPER
Tadeusz Karabin, Huntington, and Frank H. Broome, Fort Wayne, both of Ind., assignors to Majco Building Specialties, L.P., Huntington, Ind.
Filed Jul. 10, 1990, Ser. No. 550,380
Int. Cl.[5] G05D *23/08*
U.S. Cl. 236—1 G **5 Claims**

1. A thermally activated vent damper assembly for a flue, comprising:

a) a damper member adapted to be situated in relation to the flue for occluding the passage of gas through the flue;

b) at least one support member which is adapted to traverse

the flue and to suspend the damper member across the flue for movement between a closed first position and an open second position with respect to passage of gas through the flue, the closed first position occluding the passage of gas through the flue and the open second position providing for free passage of gas through the flue and wherein the support member includes a first and a second bracket member, each of the first and second bracket members



having an elongated facial portion joined together in a side-by-side relationship; and

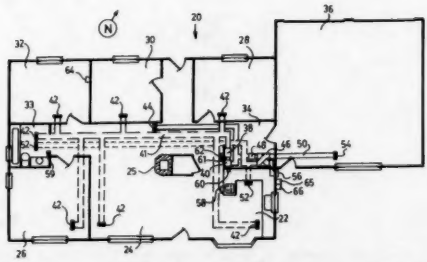
c) a thermally activated coil member arranged concentrically about the support member, the coil member having an innermost end and an outermost end, the innermost end of the coil member being coupled to the support member, interposed between the first and second bracket member and secured thereby and the outermost end being coupled to the damper member.

5,082,173

ENVIRONMENTAL CONTROLLER FOR A SEALED STRUCTURE

William F. S. Poehlman, and Darel E. Mesher, both of Hamilton, Canada, assignors to McMaster University, Hamilton, Canada

Filed Feb. 21, 1990, Ser. No. 482,574
Claims priority, application Canada, Feb. 22, 1989, 591,734
Int. Cl.[5] B01F *3/02*
U.S. Cl. 236—11 **5 Claims**



1. Apparatus for controlling the temperature and humidity in a tightly sealed building during the heating season, the apparatus comprising:

a duct system providing passage for air to and from various locations in the building;

an air circulation fan operable to move air through the duct system to provide air to said locations and to draw air from said locations;

an air heater device in the duct system operable to elevate the temperature of air moved through the duct system by the fan;

an internal temperature sensor located to sense the temperature of internal air at one of said locations;

an internal humidity sensor located to sense the relative humidity present at one of the locations;

an external temperature sensor located outside the building to sense the external air temperature;

an external humidity sensor located outside the building to sense the external humidity;

a heat recovery ventilator coupled to the duct system and operable to exchange internal air for external air, the external air being fed by the ventilator to the duct system;

an air pre-heater coupled to the ventilator and operable to heat air passing from the ventilator to the duct system;

a control system comprising a device block, circuitry block and a sensor block;

the device block being coupled to the air heater, the air circulation fan, the heat recovery ventilator, and the air pre-heater;

the circuitry block including a central processing unit operable to provide control signals to the device block to operate the devices coupled to the device block; and

an analog to digital conversion device coupling the central processing unit to the temperature and humidity sensors;

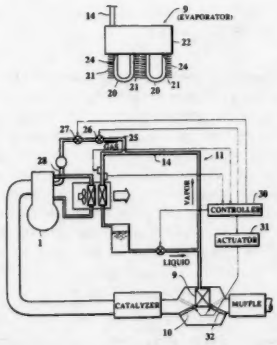
the circuitry block including data means cooperating with the processor for comparing data from e sensors with stored data to continuously compare the relative humidity inside the building with an acceptable relative humidity related to the outside temperature to determine the likelihood of condensation on the windows in the building, and for monitoring the outside relative humidity and inside temperature to provide signals to the device block to operate the devices as needed to heat internal air to maintain a predetermined temperature and to circulate the air in the building, and to operate the ventilator and preheater to expel air carrying an unacceptable moisture content and inspire outside air having a more acceptable moisture content to thereby maintain the moisture content inside the building at said acceptable relative humidity.

5,082,174

HEATING APPARATUS FOR AUTOMOTIVE VEHICLE

Shimizu Joji, Atsugi, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 13, 1990, Ser. No. 583,918
Claims priority, application Japan, Sep. 14, 1989, 1-239323
Int. Cl.[5] G05D *23/00*
U.S. Cl. 237—2 A **5 Claims**



1. A heating apparatus for an automotive vehicle, comprising:

(a) an evaporator disposed within an engine exhaust passage;

(b) a condenser disposed within a heat core facing a vehicle room;

(c) a looped heat pipe composed of a vapor feed pipe for feeding medium evaporated by said evaporator to said

condenser and a liquid return pipe for returning medium condensed by said condenser to said evaporator;

(d) a vapor pressure sensor disposed in said vapor feed pipe, for detecting medium vapor pressure;

(e) a vapor temperature sensor also disposed in said vapor feed pipe, for detecting medium vapor temperature;

(f) a controller connected to said vapor pressure and temperature sensors, for detecting abnormal heat cycle condition on the basis of medium vapor pressure and temperature detected by said vapor pressure and temperature sensors and generating a stop signal whenever an abnormal heat cycle condition is detected;

(g) a first exhaust gas bypass flapper disposed on an upstream side of said evaporator; and

(h) a flapper actuator connected to said controller, for allowing said first bypass flapper to be pivoted so that exhaust gas is blown against said evaporator in response to an absence of the stop signal from said controller but to be pivoted so that exhaust gas is bypassed away from said evaporator in response to a presence of the stop signal from said controller.

5,082,175

HEATING DEVICE, PARTICULARLY VEHICLE HEATING DEVICE

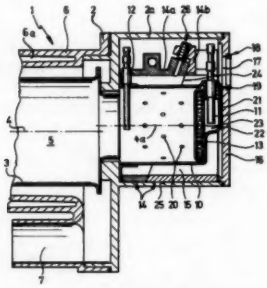
Peter Koch, Munich; Guenter Kahnau, Soecking; Peter Glaser, Munich; Georg Habbel, Neuried; Stefan Kunz, and Bernhard Schmatelka, both of Munich, all of Fed. Rep. of Germany, assignors to Webasto Ag Fahrzeugtechnik, Stockdorf, Fed. Rep. of Germany

Filed Dec. 11, 1989, Ser. No. 448,365

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1989, 3900438

Int. Cl.[5] G05D *23/00*

U.S. Cl. 237—12.3 C **21 Claims**



1. A vehicle heating device having a burner element opening into a combustion chamber defined by a combustion pipe that is disposed in a housing component of the heating device, and said burner element being contained in a burner head housing part of the heating device; wherein a sleeve member is provided which encloses the burner element within the burner head housing part and defines a combustion air chamber of predetermined value between an inner surface of the sleeve member and an outer surface of the burner element; and wherein the sleeve member at least partially contacts an inner surface of the burner head housing.

5,082,176

BASEBOARD CONDUCTOR HUMIDIFIER

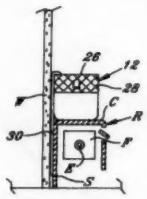
Victor Preato, 98 Elmira Ave., Torrington, Conn. 06790

Filed Jan. 22, 1991, Ser. No. 644,312

Int. Cl.[5] F24F *3/14*

U.S. Cl. 237—78 A **3 Claims**

1. A room humidifier comprising in combination a baseboard radiator including a flat backing sheet of metal secured against a wall of the room at baseboard level and having a perpendicular cover extending out horizontally along the upper end thereof, the radiator including a finned tubular hot water conduit, and a rectangular metal open-topped water-tight humidifying box having substantially the same width as the cover and a rear panel end panels and a bottom, the box sitting on its bottom on the cover, a pair of spaced clips of thin sheet metal having their upper ends doubled back and hooked over the top



of the rear panel of the box and engaging the opposite faces of the rear panel of the box respectively, the lower ends of the clips extending downward between the backing sheet and the wall of the room to hold the box in position on the cover proximate the wall, the box being adapted to receive liquid which is vaporized to humidify the room as the radiator heats.

5,082,177

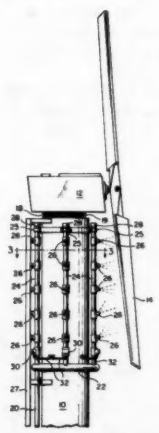
FLUID INJECTION SPRAY SYSTEM

Daryl G. Hill, 12814 Rutherford Rd., Yakima, Wash. 98903; Roderick C. Robert, 6406 Scenic Dr., and Robert R. Sutphen, 441 Pleasant Valley Rd., both of Yakima, Wash. 98908

Filed Jan. 31, 1990, Ser. No. 472,560

Int. Cl.[5] B05B *9/06*

U.S. Cl. 239—77 **8 Claims**



1. An improvement in wind machines of the type in which a propellor which rotates in a substantially vertical plane is mounted on a rotating gear box located at the top of a tower wherein the improvement comprises:

an inlet tube;

a circular riser manifold connected to the inlet tube and encircling the tower;

four tubular risers having a first and second end arrayed about the circumference of the tower with the axis of the risers substantially parallel to the axis of the tower;

each riser connected by a first end to the circular riser manifold, and by a second end to the tower by a riser support;

each riser having five nozzles arrayed along the length of the riser and directed outwardly;

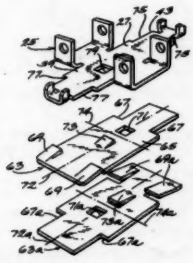
a normally closed electrically activated valve on each riser located between the riser manifold and the nozzles;
four micro-switches each of which when activated opens one valve;
an electrical power source;
wires connecting valves, micro-switches, and power source;
a cam which rotates in sequency with the gear box, the cam being located in the tower and arrayed in proximity to the micro-switches, so that rotation of the cam causes sequential activation of the switches; and
a source of fluid.

5,082,178

MOBILE SHELVING APPARATUS

James C. Muth, Eagle, and James J. Slattery, North Prairie, both of Wis., assignors to Spacesaver Corporation, Fort Atkinson, Wis.

Division of Ser. No. 315,137, Feb. 24, 1989, Pat. No. 4,984,737. This application Oct. 5, 1990, Ser. No. 593,767
Int. Cl.[5] E01B *9/42*
U.S. Cl. 238—281 **7 Claims**



4. A stack of shims comprising:
a. a first shim formed as a generally rectangular base having longitudinal and transverse center lines and opposed first and second ends and a central portion, the central portion having an opening therethrough and a first tang upstanding therefrom that are located on the longitudinal center line and symmetrically about the transverse center line, at least one corner of the first end being formed with a notch, and a second tang upstanding from the base symmetrically with said notch about one of said center lines; and
b. a second this identical to sad first shim and being oriented 180° to the first shim and superimposed thereon,
so that the first and second tangs of the first shim engage the center and end notches of the second shim, respectively, to interlock the first and second shims to each other.

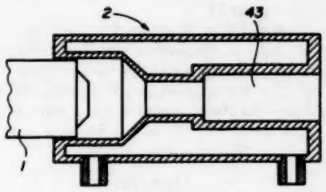
5,082,179

METHOD OF FLAME-SPRAYING OF POWDERED MATERIALS AND FLAME-SPRAYING APPARATUS FOR CARRYING OUT THAT METHOD

Wolfgang Simm, Ecublens, and Hans-Theo Steine, Chavanne, both of Fed. Rep. of Germany, assignors to Castolin S.A., Saint-Sulpice, Switzerland

Division of Ser. No. 342,341, Apr. 24, 1989, Pat. No. 5,047,265. This application Nov. 19, 1990, Ser. No. 615,253
Int. Cl.[5] B05B *1/24*
U.S. Cl. 239—80 **13 Claims**

1. Flame spray directing means for connection to a flame spray nozzle of an autogenous flame-spraying apparatus for optimizing the working parameters of said apparatus including flame speed and kinetic energy which comprises:
a hollow longitudinally extending module of tubular configuration through which flame spray material is caused to flow,
said extending module having a predetermined length with one end portion thereof shaped for coupling to said flame spray nozzle and for providing a combustion chamber therefor, and an opposite end portion on said module providing an exit end therefor,
a portion of said hollow module extending from said combustion chamber to said exit end coaxially defining an extending accelerating chamber,



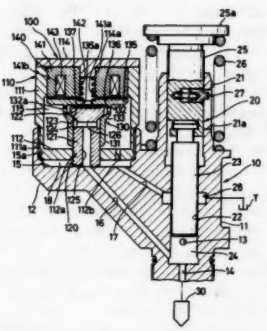
said accelerating chamber being divided into a first stage chamber following said combustion chamber and a second stage chamber following said first stage chamber, the diameter of the second stage chamber being larger than that of the first stage chamber but less than that of the combustion chamber.

5,082,180

ELECTROMAGNETIC VALVE AND UNIT FUEL INJECTOR WITH ELECTROMAGNETIC VALVE

Ken-ichi Kubo, and Xin-he Li, both of Higashimatsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1989, Ser. No. 453,903
Claims priority, application Japan, Dec. 28, 1988, 63-329278; Apr. 27, 1989, 1-105897
Int. Cl.[5] F02M *47/02*
U.S. Cl. 239—88 **14 Claims**



1. An electromagnetic valve comprising:
(a) a casing having an internal space serving as a low pressure chamber;
(b) a guide member mounted within said casing and having a cylindrical stem portion and a valve seat disposed radially outwardly of said stem portion, said stem portion having an introduction passage extending along an axis of said stem portion so as to receive a high-pressure fluid, and a communication passage leading said introduction passage to said valve seat;
(c) a valve member having a tubular portion which is fitted on said stem portion for sliding movement therealong in a direction of the axis of said guide member, said tubular portion having at one end an abutment portion disposed in opposed relation to said valve seat, said valve member being movable along the axis of said guide member between a closed position where said abutment portion is held in contact with said valve seat to interrupt the communication between said introduction passage and said

low pressure chamber and an open position where said abutment portion is held out of contact with said valve seat to communicate said introduction passage with said low pressure chamber via said communication passage, and the high-pressure fluid in said introduction chamber being spilled into said low pressure chamber during the time when said valve member is moved from its closed to open position; and

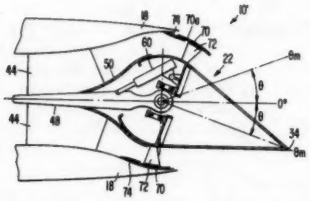
(d) electromagnetic drive means for controlling the movement of said valve member, said electromagnetic drive means including a spring urging said valve member in one of a direction toward said closed position and a direction away from said closed position, and a solenoid for urging said valve member in the other direction.

5,082,181

GAS JET ENGINE NOZZLE

Dale W. Brees; Claude W. Engelke, and Larry L. Linscheid, all of Wichita, Kans., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 18, 1989, Ser. No. 452,008
Int. Cl.[5] B64C *15/02*; F02K *1/78*
U.S. Cl. 239—265.35 **18 Claims**



1. A gas jet engine nozzle for directing an axial flow in a downstream direction along an axis of exhaust gases to obtain thrust vectoring, the engine nozzle comprising:

an exhaust nozzle member for channeling the axial flow of the exhaust gases into a flow field;

flow directing means positioned substantially within the exhaust nozzle member and in the flow field for interacting with the gases to control the direction of flow of the gases, the flow directing means having a substantially continuous surface including a diverging forebody portion and a converging afterbody portion, the afterbody portion being in the downstream direction relative to the forebody portion and including a segment having a substantially conical shape, the flow directing means being pivotally movable so that the afterbody portion moves to nonaxial positions in two dimensions perpendicular to each other and perpendicular to the axis;

support means coupled to the flow directing means for movably supporting the flow directing means within the exhaust nozzle member and in the flow field; and

actuating means operatively coupled to the flow directing means for selectively controlling the position of the flow directing means.

5,082,182

THRUST VECTORING EXHAUST NOZZLE

Raymond J. Bruchez, Jr., North Palm Beach; George E. Mount, Tequesta; James T. Dixon, Jupiter, all of Fla.; Russell H. Hagerman, Melville, N.Y.; Wayne K. Movick, Jupiter, Fla.; Aldo Arena, Smithtown, N.Y., and Jim D. Stewart, Sebastian, Fla., assignors to United Technologies Corporation, Hartford, Conn. and Grumman Aerospace Corporation, Bethpage, N.Y.

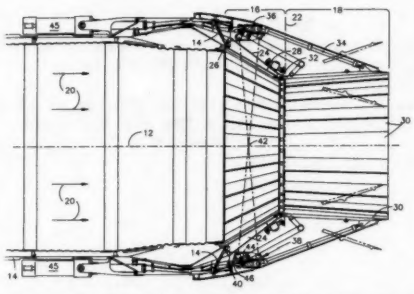
Filed Aug. 23, 1990, Ser. No. 571,797
Int. Cl.[5] B64C *15/02*
U.S. Cl. 239—265.35 **5 Claims**

1. An exhaust nozzle for selectively varying the direction of discharge of a stream of exhaust gas, comprising:

an exhaust duct having an upstream entry end and downstream discharge end, including,

a plurality of flaps defining the perimeter of the exhaust duct, each flap disposed adjacent two other flaps and extending from the entry end to the discharge end, each flap secured at the upstream end thereof to a supporting universal joint,

means, disposed between an upstream static structure and each flap, for selectively positioning said flap to the corresponding universal joint, wherein the positioning means further includes



a unison ring, disposed generally coaxially with respect to the exhaust duct,

a plurality of elongated load links, each load link secured at one end thereof to the unison ring and at the other end thereof to one of the flaps, and

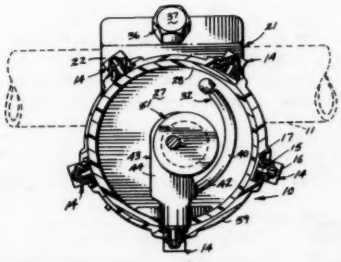
means for axially positioning and orienting the unison ring, wherein the unison ring is supported by a plurality of curved bearing tracks races supported from the static structure, the bearing tracks distributed about the circumference of the unison ring and each track configured to describe a curved path with respect to the centerpoint of the unison ring.

5,082,183

SPRAY NOZZLE SELECTOR DEVICE

Dale L. Dahlin, 623 North Mountainview, and Edward D. Dahlin, 3110 Carmichael #4, both of Moscow, Id. 83843

Filed Jul. 11, 1990, Ser. No. 551,090
The portion of the term of this patent subsequent to Sep. 26, 2006, has been disclaimed.
Int. Cl.[5] A62G *31/02*
U.S. Cl. 239—393 **8 Claims**



1. A nozzle selector device for connection to a fluid source to discharge fluid from the source through a selected nozzle, comprising:

a base

a conduit mounted to the base and having one end adapted to be connected to the fluid source and a remaining end;

a clamp member mounting the remaining end of the conduit

to the base for selective movement between an operative clamping position and an inoperative release position;

a seal on the clamp member at the remaining end of the conduit, the seal having a central opening to pass flow from the conduit;

a cover including a substantially circular wall including a central axis and mounted to the base and rotatable thereon about the central axis;

a plurality of nozzles mounted to the substantially circular wall, each having a discharge end facing outward of the wall and an intake end oriented toward the base, the nozzles being positioned in relation to the clamp member such that any selected nozzle of the plurality may be selectively rotated about the central axis into alignment with the clamp member; and

an operator on the base connected to the clamp member for selectively shifting the clamp member between the operative clamping position wherein the seal is pressed against the intake end of the selected nozzle currently in alignment with the clamp member so the conduit is joined in a sealed relationship to the selected nozzle to deliver fluid thereto, and the inoperative release position in which the clamp member and seal are separated and the cover is free to be rotated.

5,082,184

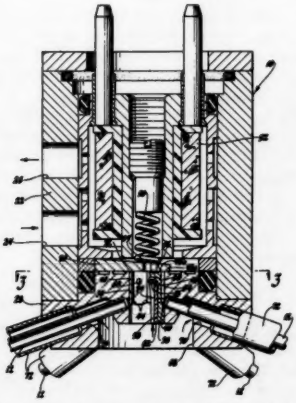
FUEL INJECTION

Ernest R. Stettner, Spencerport, and Donald D. Stoltman, Henrietta, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 449,281, Dec. 5, 1989, abandoned, which is a continuation of Ser. No. 10,296, Feb. 2, 1987, abandoned, which is a continuation-in-part of Ser. No. 859,014, May 2, 1986, abandoned. This application Sep. 26, 1990, Ser. No. 590,435

Int. Cl.[5] B05B *1/30, 7/12*

U.S. Cl. 239—408 **11 Claims**



1. A fuel injector for metering fuel to a plurality of fuel injection nozzles, said fuel injector comprising a housing and further comprising a base having a central bore, said base including a plug received in said bore and defining a fuel distribution chamber between said plug and said bore, said base also having a plurality of discharge passages opening from said distribution chamber, each of said discharge passages being adapted to direct fuel to one of said nozzles, said base having an annular valve surface through which fuel may be delivered directly from said housing to said fuel distribution chamber, said annular valve surface including a first portion surrounding said bore and a second portion at the perimeter of said plug, a single valve member associated with said valve surface, said valve member being adapted to engage said valve surface to preclude fuel delivery into said distribution chamber, and a solenoid adapted to disengage said valve member from said valve surface to permit fuel delivery to said distribution chamber and thereby to said discharge passages.

5,082,185

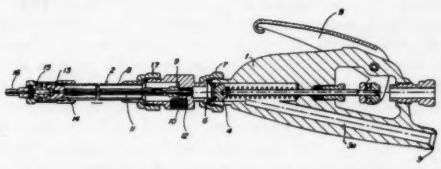
SPRAY WAND WITHOUT LIQUID LEAKAGE

William E. Evans, Jacksonville, Fla., assignor to Roussel Uclaf, France

Filed Oct. 2, 1990, Ser. No. 591,701

Int. Cl.[5] B05B *7/12, 7/04*

U.S. Cl. 239—416.5 **6 Claims**



1. An assembly for dispensing a liquid composition in spray form, said apparatus comprising;

a handle section having a duct therein, an inlet adapted to connect the duct, through a supply hose, to a liquid reservoir, an outlet through which said liquid in the duct is transported, and a means for controlling fluid flow through said outlet; and

a wand section attachable to said handle section outlet, said wand section comprising an outer tube having a sealed first end adapted to attach, through a supply hose, to a pressurized air supply, and a capillary tube disposed within said outer tube, said capillary tube having a first end passing through the first end of said outer tube and communicating with said handle section outlet,

both said outer tube and capillary tube having a second end attached to a common mixing chamber wherein said pressurized air from said outer tube mixes with said liquid from said capillary tube, the mixture being expelled from said mixing chamber through a nozzle as an aerosol spray.

5,082,186

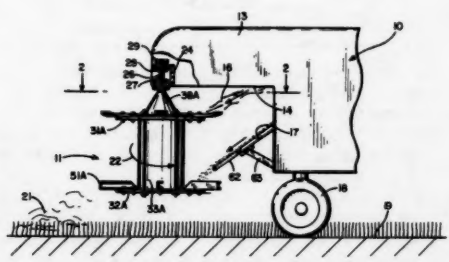
CHAFF SPREADER

Mark W. Bruns, P.O. Box 33, Gibbon, Minn. 55335

Filed Nov. 29, 1989, Ser. No. 443,570

Int. Cl.[5] A01C *17/00*

U.S. Cl. 239—682 **17 Claims**



1. A straw and chaff spreader for use with a combine having a rear section with an opening for discharging straw and chaff therefrom comprising: an upright shaft adapted to be mounted on the combine rearwardly of the opening in the rear section thereof and rotated about a longitudinal axis thereof, a first disk, a second disk mounted on the shaft below the first disk for rotation with said shaft, means located between the first and

second disks spacing said first and second disks apart including a tubular sleeve having a first end engagable with a circular portion of the first disk concentric with the shaft and a second end engagable with a circular portion of the second disk concentric with the shaft, fastener means securing the first and second disks to said means located between the first and second disks, said fastener means incuding a pluralty of rods circumferentially spaced relative to said sleeve, means connecting the rods to the first and second disks to hold the first and second disks in engagement with the first and second ends of the sleeve, an upwardly tapering cone member surrounding the shaft mounted on the first disk, a plurality of circumferentially spaced first arms extended outwardly from the first disk, means mounting the first arms on the first disk, a plurality of circumferentially spaced second arms extended outwardly from the second disk, each of said second arms having a channel shaped cross section with an upright generally radial back, a bottom flange, and a top flange projected forwardly relative to the direction of rotation of the shaft, and means securing the bottom flange to said second disk whereby upon rotation of said shaft the first disk and first arms thereon are rotated to spread straw discharged through said opening, and the second disk and second arms thereon are rotated to spread chaff discharged through said opening onto the ground behind the combine.

5,082,187

VIBRATING SCREEN CRUSHER

Bernd Kirchhoff, and Hermann Mecklenfeld, both of Ennigerloh, Fed. Rep. of Germany, assignors to O&K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany

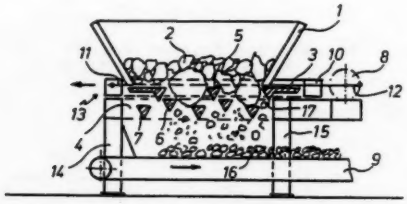
PCT No. PCT/EP89/00485, § 371 Date Jan. 7, 1991, § 102(e) Date Jan. 7, 1991, PCT Pub. No. WO90/00443, PCT Pub. Date Jan. 25, 1990

PCT Filed May 2, 1989, Ser. No. 474,071

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1988, 3822801

Int. Cl.[5] B02C *1/00*

U.S. Cl. 241—84 **13 Claims**



1. A device for comminuting material comprising:

a bunker having an outlet;

a stationary grate disposed adjacent said outlet;

a movable grate disposed between said outlet and said stationary grate, said movable grate being translatable relative to said stationary grate;

a plurality of crushing elements having substantially triangular cross sections being disposed on each said stationary and movable grates, each said crushing element having a substantially downwardly oriented tip, a free space being defined between adjacent ones of said crushing elements disposed on said stationary grate, each said tip of said crushing elements disposed on said movable grate extending into one of said free spaces, and each said crushing element being free of contact with the other said crushing elements when said movable grate is translated relative to said stationary grate.

5,082,188

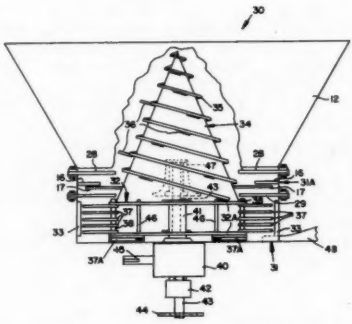
APPARATUS FOR PROCESSING MATERIAL

Oren D. Urich, Windsor, Colo., assignor to Sterling Grinding Company, Inc., Sterling, Colo.

Continuation-in-part of Ser. No. 90,792, Aug. 28, 1987, abandoned. This application Oct. 13, 1988, Ser. No. 257,438

Int. Cl.[5] B02C *13/286*

U.S. Cl. 241—56 **21 Claims**



1. Apparatus for processing material to reduce the particle size thereof, said apparatus comprising:

(a) a housing including a circular interior wall;

(b) a rotor member being adapted to be rotatably driven within said housing; said rotor member including a feed side and discharge side; wherein said rotor member is supported solely at said discharge side;

(c) a plurality of blade members having first and second ends, wherein said first end of each said blade is attached to said rotor and is second end of each said blade extends outwardly from said rotor;

(d) drive means adapted to drive said rotor in a rotatable manner within said housing;

(e) feed means adapted to feed said material to said feed side of said rotor in full face feed; wherein said feed means comprises a cone member, wherein the base of said cone member is attached to said rotor, and wherein said cone member includes spiral fliting;

wherein an annular channel is defined between said interior wall of said housing and said rotor member; wherein said blade members project into said channel when said rotor member is rotated; wherein said cavity is defined within said housing rearwardly of said blade members to receive material processed by said rotor member; and wherein an unrestricted said charge opening is disposed adjacent said cavity to allow exit of processed material from said housing.

5,082,189

CHOPPER FOR COMMINUTING STALK-SHAPED HARVESTED CROPS

Klinger Ernst, Harsewinkel, and Isfort Heinrich, Duelmen, both of Fed. Rep. of Germany, assignors to Class OHG, Harsewinkel, Fed. Rep. of Germany

Filed Sep. 10, 1990, Ser. No. 579,696

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1989, 3933779

Int. Cl.[5] B02C *18/22*

U.S. Cl. 241—158 **4 Claims**

1. Chopper for comminuting stalk-shaped harvested crops comprising:

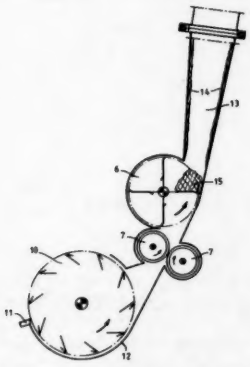
a housing having walls defining a conveying passage, said conveying passage including a steeply rising, tapering conveyor shaft;

a cutting drum rotatingly disposed in the housing for cutting harvested crops;

a pair of axially parallel press rollers disposed downstream of

the cutting drum in the housing for receiving chopped material fed from the cutting drum; and

a post-accelerator rotor having a plurality of blades arranged adjacent to and directly above the press rollers in



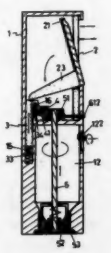
the conveying passage, the cutting drum, the press rollers and the post-accelerator rotor are of the same width, and the steeply rising conveyor shaft begins only above the post-accelerator rotor.

5,082,190

PEPPER GRINDER

Tzung-Wen Chen, 2F3R, No. 14, Ching Chung St., Tainan, Taiwan

Filed Dec. 5, 1990, Ser. No. 622,512
Int. Cl.[5] A47J *42/04*
U.S. Cl. 241—169.1 **5 Claims**



1. A pepper grinder comprising:

a cylindrical body having a salt chamber at an upper section provided with a filling opening covered with a rotatable lid at its top surface and a pepper grain chamber at its lower section provided with a filling opening covered with a rotatable lid in a vertical wall of the body;

a manipulating plate of a rectangular curved shape to close an rectangular opening in the vertical wall of the upper section of the body, having its upper edge stopped by a projecting-down edge of the body from falling out of the body, and having two tennons at the bottom of its two vertical sides to fit in two mortises set in side walls defining the rectangular opening and a triangular arm projecting radially inward from its inner surface, said two tennons fitting in said two mortises being able to function as pivots to make the manipulating plate incline only inward by manual operation, said triangular arm having a horizontal bottom side to touch with the top face of a vertical rack;

a rack fitting in a rack recess in the body wall opposite to the rectangular opening and resiliently pushed by a spring at its lower end, having a teeth surface to mesh with a movable gear;

a movable gear meshing with the rack and having both ends of its shaft fitting and able to move up and down in two shaft recesses;

a worm mounted on a worm shaft supported in two opposite walls of the body to mesh with a worm wheel mounted on the top end of a long shaft and a gear mounted on the same worm shaft and able to mesh with the movable gear;

a long shaft vertically passing through the pepper chamber and having its top end mounted with the worm wheel and its bottom end mounted with a grinding wheel;

two round height adjusters, upper and lower, being located just under the worm wheel and having a central hole for the shaft to pass through, said upper height adjuster having an inclined bottom surface and an adjusting bar projecting out sidewise through the body wall, said lower height adjuster having an inclined upper surface to touch with the inclined bottom surface of the upper one and being immovably fixed with the shaft; and

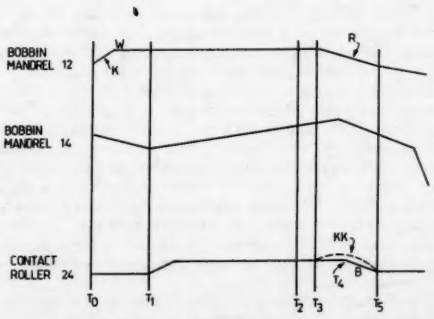
said manipulating plate being able to be manually pressed to incline only inward said triangular arm of said plate being able to press down the rack when said plate is pressed inward, said rack being able to rotate and move the movable gear toward the gear mounted on the worm shaft, said movable gear being able to mesh with and rotate said gear, said worm being able to be simultaneously rotated by the rotation of the said gear, said worm wheel being able to be rotated by the worm, said shaft being able to be rotated by the worm wheel, said grinding wheel being able to be rotated by the shaft by pressing inward of the manipulating plate and to be stopped by the shaft by releasing the manipulating plate to its original position of closing the opening, said upper height adjuster being able to be rotated by the adjusting bar to change the mutual touching points of its bottom surface with an upper surface of the lower height adjuster so as to push up the worm wheel, the shaft and finally the grinder wheel so that the gap between the grinding wheel and the grinding cylinder can be altered to change the degree of minuteness of the pepper ground.

5,082,191

METHOD OF, AND APPARATUS FOR, CHANGING BOBBINS IN AUTOMATIC WINDERS

Armin Wirz, Ossingen, Switzerland, assignor to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed Mar. 29, 1990, Ser. No. 501,252
Claims priority, application Switzerland, Apr. 6, 1989, 01280/89
Int. Cl.[5] B65H *67/044*
U.S. Cl. 242—1800 A **5 Claims**



1. A method of continuously winding at least one filament and automatically changing bobbins in an automatic winder

having at least two bobbin mandrels, each provided with a self-contained drive, and a contact roller which is in contact with the package being formed on one of the at least two bobbin mandrels during a normal winding operation, such contact roller being provided with a self-contained drive, comprising the steps of:

winding at least one filament onto one of the at least two bobbin mandrels during the normal winding operation;

traversing the at least one filament during the winding;

completing the package to provide a fully wound package at the end of the normal winding operation;

interrupting the contact between the contact roller and the fully wound package;

suspending traverse motion of the at least one filament;

increasing the rotational speed of the contact roller; and

transferring the at least one filament to the other one of the at least two bobbin mandrels.

5,082,192

APPARATUS FOR DELIVERING INDIVIDUAL PACKAGES OR GROUPS THEREOF TO A PACKAGE TRANSPORT SYSTEM

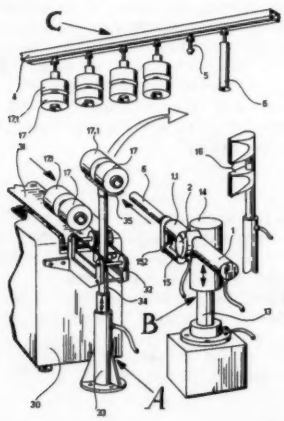
Manfred Langen; Gregor Gebald, both of Moenchengladbach; Siegfried Inger, Krefeld, and Manfred Schroeders, Moenchengladbach, all of Fed. Rep. of Germany, assignors to Palitex Project Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Feb. 21, 1990, Ser. No. 483,019

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1989, 3906950

Int. Cl.[5] B65H *54/00, 67/06*

U.S. Cl. 242—18 R **16 Claims**



1. Yarn package transfer apparatus including means for removing hollow yarn package adapter devices from downwardly and generally vertically-extending package holders movably and serially-mounted on an overhead conveying system, for inserting such hollow adapter device into the hollow tubes of a desired number of yarn packages positioned in a generally horizontal position in a package supply assembly, and for transferring such packages of yarn from the package supply assembly and mounting the hollow adapter device and yarn packages carried thereby onto the vertically-extending package holder of the overhead conveying system for conveying of the yarn packages; said means comprising:

a generally vertically oriented stationary column and slide means mounted thereon for upward and downward movement;

a knob means mounted on said slide means for movement therewith and for rotating movement with respect thereto; and

a cylinder and lifting element means mounted thereon for advancing and retracting movement, said cylinder and lifting element being carried by said knob means for rotating movement between a generally vertically-oriented position and a generally horizontally-oriented position, said lifting element means having carrier means on an outer end for removably receiving and carrying the adapter device.

5,082,193

THREAD GUIDING UNIT WITH AUTOMATIC CONTROL PARTICULARLY FOR SPOOLING MACHINES

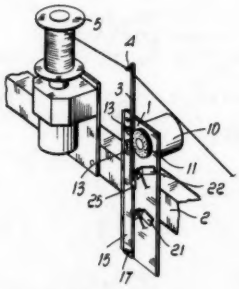
Romano Boni, Via Umberto I, 10, 25023 Gottolengo (Province of Brescia), Italy

Filed Jun. 11, 1990, Ser. No. 536,364

Claims priority, application Italy, Jun. 20, 1989, 20930 A/89

Int. Cl.[5] B65H *54/28*

U.S. Cl. 242—158 R **18 Claims**



1. Thread guiding unit comprising;

at least one plate associable with a spooling machine frame,

at least one bar connected to said plate,

at least two rollers mounted on said bar,

a step motor connected to said plate,

at least one control wheel driven by said step motor,

at least one rod located on said bar,

a first lateral edge defined by said rod and being in contact engagement with said control wheel,

a second lateral edge defined by said bar and being in contact engagement with said rollers,

a direction of movement defined by said rod upon activating said step motor,

at least one thread guide supported by said rod,

at least one abutment supported by said rod,

a second stroke limit sensor connected to said plate and reversing the direction of motion of said step motor upon being contacted by said abutment, and

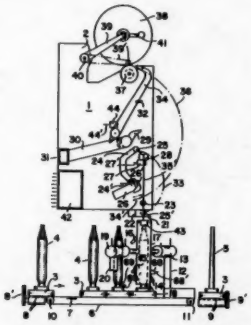
a first stroke limit sensor connected to said plate and being spaced from said second stroke limit sensor, said first stroke limit sensor reversing the direction of motion of said step motor upon being contacted by said abutment, wherein said control wheel is made of an elastically yielding material, and means for releasably connecting said bar to said plate for movement of said bar in a direction perpendicular to said direction of movement defined by said rod.

5,082,194

METHOD AND APPARATUS FOR EVALUATING THE INTERRUPTION OF WINDING ON A TEXTILE WINDING MACHINE

Hans Grecksch; Dietmar Engelhardt; Gregor Rüth, and Rolf Haasen, all of Mönchengladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Fed. Rep. of Germany

Filed Nov. 4, 1990, Ser. No. 613,088
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1989, 3937824; Oct. 15, 1990, 4032617
Int. Cl.[5] B65H *54/22*
U.S. Cl. 242—35.6 R 18 Claims



1. In a textile winding process in which yarn is wound from a supply package onto another package, a method for restoring the normal winding of yarn following a yarn break of the type which creates an upper yarn end on the package being wound due to an interruption in the yarn traveling from the supply package to the package being wound, comprising:

executing a lower yarn end engaging cycle which includes performing at least one attempt to engage a lower yarn end from the supply package and detecting the presence or absence of engagement of a lower yarn end after said performing an attempt;

exchanging the supply package for a new supply package in response to the detection of the absence of a lower yarn end after a predetermined number of said attempts to engage said lower yarn end;

repeating said executing cycle and said exchanging the supply package until a selected one of the detection of a lower yarn end or the completion of a predetermined number of repetitions has occurred;

excuting an upper yarn end engaging cycle, in response to said detecting the presence of engagement of a lower yarn end, which includes performing an attempt to engage an upper yarn end from the package being wound and

detecting the presence or absence of engagement of an upper yarn end after said performing an attempt; and

performing a yarn joining cycle, in response to said detecting the presence of engagement of a lower yarn end, in which the detected upper yarn end and the detected lower yarn end are joined together.

5,082,195

REEL TABLE SHIFTING DEVICE

Tsukasa Saito; Hiroshi Kiriyama, both of Kanagawa, and Toshiaki Noguchi, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 24, 1990, Ser. No. 513,961
Claims priority, application Japan, Apr. 27, 1989, 1-108164
Int. Cl.[5] G11B *15/00*
U.S. Cl. 242—199 37 Claims

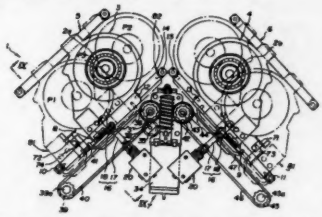
1. A reel table shifting device adapted to receive a tape cassette which is in a range of different sizes, said reel table shifting device comprising:

guide means;

reel table means for supporting said cassette;

means mounting said reel table means for movement along said guide means;

driving means for moving said reel table means along said guide means in a predetermined path between first and second mount positions such that said cassette can be mounted at respective one of said mount positions depending upon the size of said cassette; and



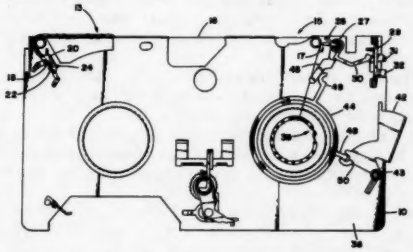
means for physically blocking movement of said reel table means in a predetermined intermediate mount position which is between said first and second mount positions and which is the same irrespective of the direction of movement of said reel table means from said first or second mount position toward said intermediate mount position.

5,082,196

VIDEO CARTRIDGE ADAPTER INTERLOCK SYSTEM

Thomas A. Turgeon, Fridley, Minn., assignor to Minneapolis Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 13, 1990, Ser. No. 582,436
Int. Cl.[5] G11B *15/66*
U.S. Cl. 242—199 6 Claims



1. An adapter for adapting a cartridge to a cassette format comprising:

a housing, having a laterally disposed take-up side and having a laterally disposed supply side;

a take-up reel located within said housing in said take-up side;

cartridge acceptance means, located laterally within said housing in said supply side, for receiving and retaining a single supply reel cartridge;

tether means connected to said take-up reel and threaded across said housing, from said take-up side to said supply side, for defining a tape path;

a tape access door connected to said housing for covering said tape path when said door is in a first closed position, and for permitting access to said tape path when said door is in a second open position;

actuator means coupled to said tether means, and adapted for movement along said tape path for operating interlock means;

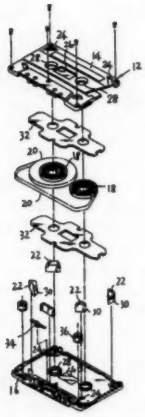
said interlock means, proximate said tape path, adapted for operation by said actuator means, for preventing opening of said tape access door while said actuator means in on said supply side of said housing and for permitting opening of said door while said actuator means is on said take-up side of said housing.

5,082,197

TAPE CASSETTE

Takateru Satoh; Kimio Tanaka, both of Saku; Haruo Shiba, Komoro; Noboru Uemura, Odawara, and Kenkichi Akaoka, Saku, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jul. 3, 1989, Ser. No. 375,248
Claims priority, application Japan, Jul. 4, 1988, 63-87985[U]
Int. Cl.[5] G11B *23/00*
U.S. Cl. 242—199 **8 Claims**



1. A tape cassette comprising:

a rectangular casing comprising an upper casing member and a lower casing member joined together to define a space therein, said casing members having apertures adjacent each of their respective corners on their exterior surface;

a pair of reel hubs rotatably arranged in said casing;

a magnetic tape wound on said reel hubs while being stretched therebetween; and

at least four separate and spaced weighting elements, each having a mounting flange and a vibration-damping property and disposed on said casing adjacent said respective corners thereof;

said casing being formed with fitting means including said aperture adjacent each corner for receiving said weighting elements;

said weighting elements being detachably held in said fitting means of said casing to extend through said apertures so that the upper and lower surfaces of said weighting element are, respectively, approximately co-planar with a corresponding surface of said upper and lower casing members and said mounting flanges extend within said casing.

5,082,198

RECREATIONAL FLYING VEHICLE

Navnit R. Patel, 109 Arundel Rd. #4, Burlingame, Calif. 94010

Filed Feb. 12, 1990, Ser. No. 478,549
Int. Cl.[5] B64C *39/00*
U.S. Cl. 244—2 **11 Claims**

2. A recreational vehicle comprising:

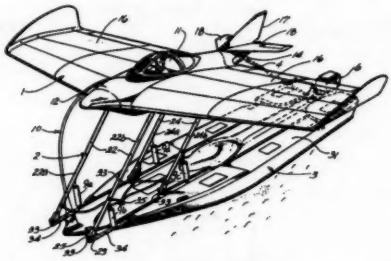
a surface vehicle having drive means for propulsion along a generally flat surface;

a flying vehicle including a wing having plural flaps; and

linkage means for coupling the flying vehicle to the surface vehicle and for automatically and simultaneously adjustably limiting an angle of attack of the wing and an angle of flap deflection, the linkage means comprising

first and second front support arms each having bottom ends pivotally mounted on the surface vehicle for pivoting on a first horizontal axis, each front support arm having a top end pivotally mounted on the flying vehicle for pivoting on a second horizontal axis;

first and second rear support arms each having bottom ends pivotally mounted to the surface vehicle aft of the first and second front support arms for pivoting on a third horizontal axis, each rear support arm having a top end pivotally mounted on the flying vehicle for pivoting on a fourth horizontal axis;



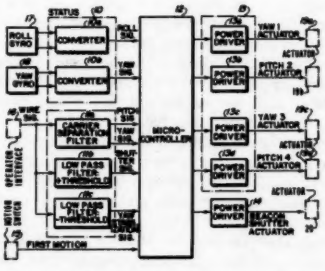
first and second linkage arms each having a bottom linkage arm end affixed to one of the first and second rear support arms at a point below the flying vehicle, the linkage arms and the support arms intersecting at a fixed acute angle, each linkage arm further having a top linkage arm end pivotally mounted to one of the flaps.

5,082,199

DIGITAL ELECTRONICS ASSEMBLY FOR A TUBE-LAUNCHED MISSILE

Richard W. Oaks, Tucson, Ariz., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 21, 1989, Ser. No. 384,228
Int. Cl.[5] F41G *7/00*
U.S. Cl. 244—3.12 **13 Claims**



1. A hybrid analog/digital electronics control unit for a tube-launched missile comprising:

a) positional status means (**10**) being responsive to signals from a roll gyro (**17**) and a yaw gyro (**18**), said positional status means having,

1) a roll conversion means (**10*a***) for converting a signal from the roll gyro to a roll status signal, and,

2) a yaw conversion means (**10*b***) for converting a signal from the yaw gyro to a yaw status signal;

b) directional means (**11**) being responsive to signals from an operator for generating a directional pitch signal and an directional yaw signal therefrom; and,

c) said positional status means and the directional means being analog and said control means being digital;

d) control means (**12**) being responsive to the yaw status signal, the roll status signal, the directional yaw signal, and the directional pitch signal, and generating therefrom,

a primary yaw control signal, a secondary yaw control signal, a primary pitch control signal, and, a secondary pitch control signal; and,

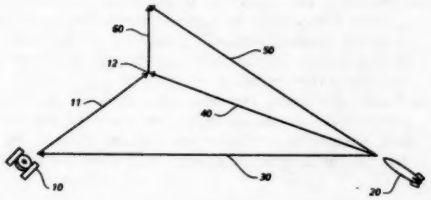
(e) means for generating a shutter direction signal based upon said operator generated signal.

5,082,200

METHOD OF GUIDING AN IN-FLIGHT VEHICLE TOWARD A TARGET

Roger L. Gray, King George, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 3, 1990, Ser. No. 620,671
Int. Cl.[5] F41G *7/00*
U.S. Cl. 244—3.15 **8 Claims**



1. A method of guiding an in-flight vehicle toward an intercept with a target exhibiting a known or predictable thrust profile, comprising the steps of:

a) acquiring the target by means of a sensing device mounted on the vehicle wherein said acquisition of the target is indicative of the vehicle entering a terminal intercept phase of flight during which time the vehicle will undergo an alternating series of I vehicle coasts and (I-1) vehicle diverts;

b) providing, during the terminal intercept phase of flight, position and velocity information of the target with respect to the vehicle at least during each of the first (I-1) vehicle coasts;

c) selecting a course change for the vehicle at least during the first (I-1) vehicle coasts, said course change being based upon said position and velocity information wherein said course change is offset from a collision course with the target, said offset having a magnitude defined by a distance between the vehicle and the target when a projected trajectory of the vehicle is at a closest approach with the target, wherein said offset magnitude during the I-th vehicle coast is: 1) related to the radius of an intercept enhancement device if the vehicle is equipped with same or 2) equal to zero if the vehicle is not equipped with an intercept enhancement device; and

d) diverting the vehicle at each of the (I-1) vehicle diverts based upon said course change whereby the vehicle intercepts the target during the I-th coast.

5,082,201

MISSILE HOMING DEVICE

Jean-Francois Le Bars, Paris; Vincent Vilbois, Montigny le Bretonneux, and Oliver Dez, Issy les Moulineaux, all of France, assignors to Thomson CSF, Paris, France

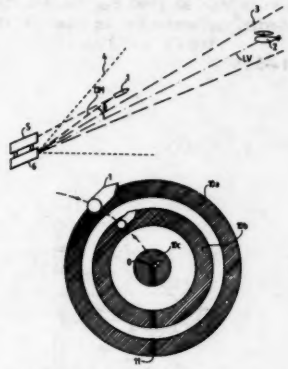
Filed May 11, 1990, Ser. No. 522,040
Claims priority, application France, May 23, 1989, 89 06718
Int. Cl.[5] F41G *7/26*; F42B *15/01*
U.S. Cl. 244—3.16 **4 Claims**

1. A missile homing device to determine coordinates expressing the angular deviation between the direction in which a missile is located and a line of sight in which a target is located, comprising:

means for analyzing an infrared image,

means to determine coordinates expressing the angular deviation, on the basis of signals being by the means for analyzing,

wherein the means for analyzing an image covers a field, the



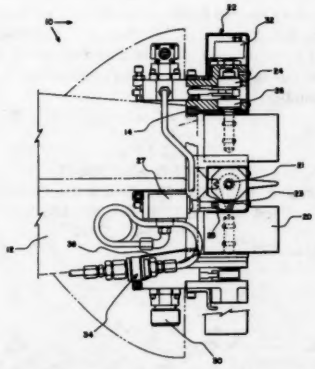
section of which, in a plane perpendicular to the line of sight, is a ring having a diameter that is variable as a function of the angular deviation between the direction in which the missile is located and the line of sight.

5,082,202

DROPPABLE JET VANE TVC

Michael D. Jacobson, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 6, 1975, Ser. No. 537,640
Int. Cl.[5] F42B *10/66*
U.S. Cl. 244—322 **11 Claims**



1. The method of launching a reaction engine powered airborne vehicle into horizontal flight from a standing vertical position comprising:

attaching a plurality of individually controlled vanes having a hinge axis, in the path of the reaction engine nozzle flow;

utilizing said vanes to control pitch, roll and yaw of said vehicle during initial flight and to slew said vehicle from vertical to horizontal attitude; and

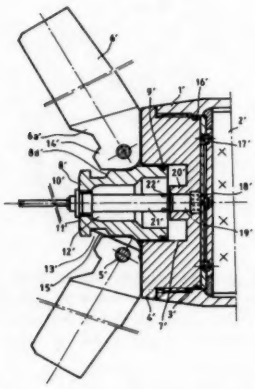
effecting the release and jettison of said vanes from the path of said engine nozzle flow when said vehicle has achieved horizontal attitude.

5,082,203

SYSTEM FOR THE OPENING OF AN UNFOLDING TAIL UNIT FOR PROJECTILES

Bernard Baubry, Paris, France, assignor to Thomson-Brandt Armements, Boulogne Billancourt, France

Filed Mar. 20, 1990, Ser. No. 496,221
Claims priority, application France, Mar. 24, 1989, 8903924
Int. Cl.[5] F42B *13/32*
U.S. Cl. 244—3.28 **13 Claims**



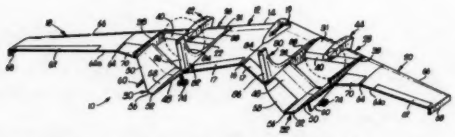
1. A system for opening an unfolding tail unit for a projectile comprising a propulsion unit and formed by a plurality of fins hinged on shafts and distributed around the projectile, including a part capable of sliding in an imperviously sealed manner from a first position to a second position in a first bore so as to drive means for pivoting fins, said part defining a first chamber with the first bore and being movable by the pressure of a gas in this first chamber, generated by a gas generator, the fins being completely unfolded during the shifting of the part towards the second position, said system comprising a closing means fixed on the sliding part, making it possible, before said sliding part has reached the second position, to isolate said first chamber from a second chamber comprising an ignition device for igniting the propulsion unit that gets triggered under the effect of a pressure, and once said second position has been reached, to put said first chamber in communication with said second chamber.

5,082,204

ALL WING AIRCRAFT

Leon J. Croston, Rt. 1, Box 892, Bois d'Arc, Mo. 65612

Filed Jun. 29, 1990, Ser. No. 546,550
Int. Cl.[5] B64C *39/10*
U.S. Cl. 244—126 **30 Claims**



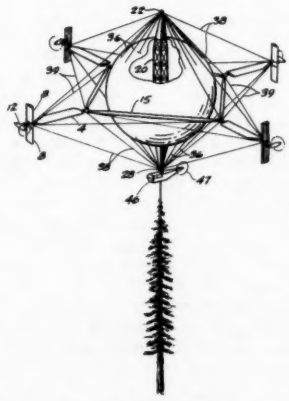
1. In an all-wing aircraft, the combination of:
a center wing and foreplane section provided with a leading edge and a trailing edge, said center wing section being configured to define an airfoil between the leading and trailing edges thereof;
a pair of outer wing sections each having a leading edge and a trailing edge, each of said outer wing sections being shaped to present an airfoil between respective leading and trailing edges thereof;
means joining the outer wing sections to opposed sides of the center wing section in disposition such that the outer wing sections extend outwardly in opposite directions away from the center wing section,
at least a part of said center section being located ahead of the center of lift of the wing sections in disposition to generate a positive pitching moment when the aircraft is in flight; and
aftplane means associated with the wing sections and including at least two airfoil defining, generally planar members each having a leading edge and a trailing edge,
the members being disposed with the leading edges and trailing edges thereof oriented transversely of the aircraft with at least a part of the leading edges of each aft of the leading edges of the wing sections,
said members also extending downwardly below the wing sections in disposition for airflow therebetween and thereover and dimensioned and located aft of the center of gravity to enhance the static and dynamic pitch and yaw stability of the aircraft,
said generally planar members being disposed at an angle with respect to one another transversely of the aircraft and converging as the outer portions thereof are approached in a direction downwardly from the wing sections.

5,082,205

SEMI-BUOYANT COMPOSITE AIRCRAFT WITH NON-ROTATING AEROSTAT

Robert L. Caufman, 205 S. Maryland Ave., Wilmington, Del. 19804

Filed Aug. 9, 1990, Ser. No. 564,645
Int. Cl.[5] B64B *1/34*; B64C *37/02*
U.S. Cl. 244—025 **4 Claims**



1. I claim a hybrid aircraft comprising:
a large non-rotating balloon chamber containing a lighter-than-air gas which provides a large static lifting force having a magnitude substantially greater than the weight of said aircraft;
a support structure system which is substantially longer in length than in width which is encased by the balloon chamber said support structure system having two ends which protrude from the balloon chamber at opposite sides along the center line of the balloon chamber;
a rotatable rotor frame which is suspended from the ends of the support structure system about the non-rotating balloon chamber;
a plurality of blade airfoils connected to the rotor frame and

oriented radially relative to said balloon chamber whereby the angle of attack of each blade airfoil can be varied;

a thrust means mounted at or near the outboard end of the blade airfoils;

a wing airfoil perpendicularly connected to the end of the blade airfoil at the same end as the thrust means whereby the angle of attack of each wing airfoil can be varied;

a means of anti-torque;

a control cab;

a load line.

5,082,206

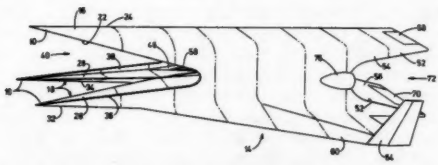
HYPERSONIC FLIGHT VEHICLE

Paul H. Kutschenreuter, Jr., and Jon M. Vishnauski, both of Loveland, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 25, 1988, Ser. No. 223,826

Int. Cl.[5] B64D *33/02*; F02C *7/04*

U.S. Cl. 244—53 B **10 Claims**



1. A flight vehicle engine inlet comprising:

(a) a first member having at least a partial generally caret-shaped surface portion for producing a first generally two-dimensional wedge flow;

(b) a second member having at least a partial generally caret-shaped surface portion for producing a second generally two-dimensional wedge flow, wherein said first and second members are disposed to generally oppose each other across a capture region which at least partially includes said first and second two-dimensional wedge flows; and

(c) an aft portion having an orifice defining an engine inlet throat and joining said first and second members such that said throat receives at least a portion of said first and second two-dimensional wedge flows.

5,082,207

ACTIVE FLEXIBLE WING AIRCRAFT CONTROL SYSTEM

Jan Tulinius, Huntington Beach, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 698,061, Feb. 4, 1985, abandoned. This application Jul. 16, 1990, Ser. No. 554,094

Int. Cl.[5] B64C *3/44, 13/16*

U.S. Cl. 244—76 R **40 Claims**

1. A system for control of an aircraft in one or more of its axes comprising:

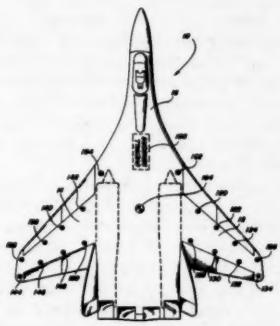
flexible wings;

flight control surfaces mounted on said flexible wings;

aircraft sensors for providing signals indicative of the overall motion of the aircraft;

processing means responsive to said signals from said aircraft sensors for determining control surface movements which will aeroelastically induce desired deflections in said wings to effect the desired control of the aircraft and selectively generating control signals to bring about said control surface movements; and

control means receiving said control signals from said processing means for moving said control surfaces in accordance with said control signals in a manner to aeroelasti-



cally induce said desired deflections of said flexible wings to produce said desired control of the aircraft.

5,082,208

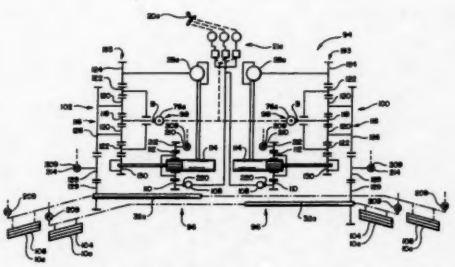
SYSTEM AND METHOD FOR CONTROLLING AN AIRCRAFT FLIGHT CONTROL MEMBER

Charles B. Matich, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1989, Ser. No. 415,193

Int. Cl.[5] B64C *3/40*

U.S. Cl. 244—78 **30 Claims**



1. A control system to selectively cause an aircraft flight control member to assume various flight control positions, said control system comprising:

a. a hydraulic drive means to move said flight control member to said flight control positions;

b. a control valve means operatively connected to a source of hydraulic fluid and to said hydraulic drive means to selectively direct said hydraulic fluid thereto, said control valve means comprising:

i. a valve housing means;

ii. a first valve element moveable relative to said valve housing;

iii. a second valve element moveable relative to said valve housing, with said first and second valve elements being moveable relative to one another, wherein said first valve element moves from an initial position thereof relative to said valve housing to a selected new position in a manner to open a selected port means to cause fluid to flow to said hydraulic drive means and also to establish a selected feedback displacement quantity, which is a quantity by which said second valve element is to be displaced from an initial position thereof relative to said valve housing in a manner that when said second valve element is displaced by said feedback displacement quantity to a new position, said second valve element

closes a selected port means to interrupt fluid flow to said hydraulic drive means;

c. a first valve control means to move said first valve element relative to said valve housing;

d. an input means to cause said first valve control means to move said first valve element to said selected positions of said first valve element, with said system being characterized in that said first valve positions correspond to respective selected positions of said flight control member;

e. a second valve control means to move said second valve element relative to said valve housing and relative to said first valve element;

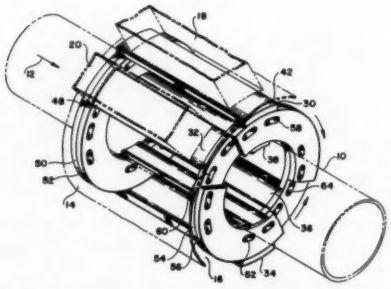
f. a sensing and feedback means responsive to an input which is related to a displacement of said flight control member in a manner to sense said member displacement and to cause said second valve control means to displace said second valve element relative to said valve housing by a function of said member displacement, whereby said hydraulic drive means moves said flight control member by an amount needed so that said flight control member assumes said selected flight control positions.

5,082,209

THRUST REVERSER ASSEMBLY

Andrew G. Keyser, Delray Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 1, 1991, Ser. No. 662,645
Int. Cl.[5] B63H *11/10*; F02K *1/54*
U.S. Cl. 244—110 B **7 Claims**



7. A thrust reverser assembly for a gas turbine engine aircraft comprising:

a wall forming a circular gas turbine exhaust duct;

a plurality of radially extending reverser ducts located outside said wall;

a plurality of radial port openings through said wall fluidly connecting said exhaust duct and said reverser ducts;

a plurality of door sets located in said plurality of port openings, sized and sealable to close a port opening through said wall;

at least one rotatable upstream support ring circumferentially surrounding said wall upstream of said port opening;

at least one rotatable downstream support ring circumferentially surrounding said wall downstream of said port opening; and

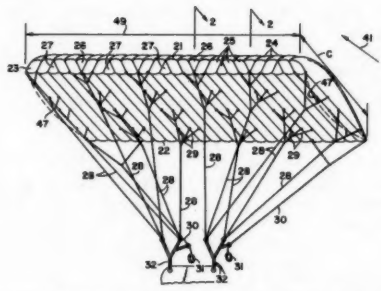
each of said door sets secured to said at least one upstream support ring and to said at least one downstream support ring, whereby said door sets may each be circumferentially rotated away from the port opening in which they are sealable.

5,082,210

PARACHUTE CANOPY

Leonard E. Morehead, Jr., 911 Lazy La., Bryan, Tex. 77802

Filed Jun. 28, 1990, Ser. No. 544,913
Int. Cl.[5] B64D *17/02*
U.S. Cl. 244—145 **20 Claims**



1. In a ram air inflatable glidable parachute having a substantially horizontal canopy and a plurality of generally vertical suspension lines connecting said canopy to a pay load attachment means, said canopy having a horizontal top skin vertically spread above a horizontal bottom skin, said top and bottom skins being connected to each other by a plurality of tubular contiguous cells having generally an airfoil shape in longitudinal cross section extending from a leading edge to a trailing edge with an opening near said leading edge to permit air to flow into said cell from the surrounding atmosphere; the improvement which comprises said canopy cells being arranged in cell clusters of 2 or more contiguous cells between adjacent said suspension lines, the cells in each said cluster being mixtures of different cells each having the general lateral cross sectional shape of a polygon of 3–5 sides, said mixture of each said cluster including a first number of said cells having a first lateral cross sectional shape and a second number of said cells having a different second lateral cross sectional shape, the orientation and arrangement of said cells in said cell clusters and the canopy attachment positions of said suspension lines being such that when in use gliding through the air with said pay load suspended therebeneath said canopy is substantially horizontal.

5,082,211

METHOD AND APPARATUS FOR MITIGATING SPACE DEBRIS

Robert O. Werka, Huntsville, Ala., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

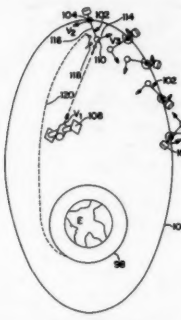
Filed Oct. 31, 1990, Ser. No. 606,897
Int. Cl.[5] B64G *1/22*
U.S. Cl. 244—158 R **49 Claims**

1. A method of mitigating space debris in a controllable fashion, comprising:

placing a first body of mass M_1 in orbit about a planet;

positioning a second body of mass M_2, which is subject to producing debris, in a lower altitude orbit by extending a tether line joining said first and second body out an essentially predetermined distance away from said first body, whereby said first body brakes said second body such that any debris produced by said second body deorbits at a rapid rate, and the step of extending said tether out away

from said first body includes extending said tether a distance away from said first body which results in placing



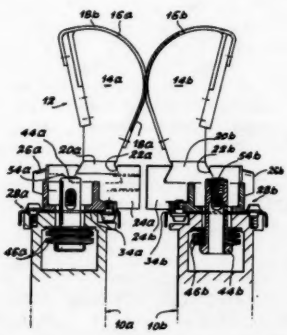
the debris in a controlled deorbit that is less than about one half orbital periods in duration.

5,082,212

TORQUE LIMITER DEVICE AND DEPLOYABLE LENGTHENING PIECE OF A SPACE INSTRUMENT EQUIPPED WITH THIS DEVICE

Gérard Vezain, Mandelieu; Jacques Auternaud, Mougins, and Daniel Viale, Fayence, all of France, assignors to Societe Nationale Industrielle et Aerospatiale, Paris, France

Filed Apr. 25, 1991, Ser. No. 691,345
Claims priority, application France, May 17, 1990, 90 06171
Int. Cl.[5] B64G *1/44*
U.S. Cl. 244—173 **9 Claims**



1. Torque limiter device designed to be mounted on a deployable lengthening piece of a space instrument between one element of this lengthening piece and an adjacent joint, wherein this device includes elastic recall means applying with a predetermined force a contact surface of said element against a surface contact of a plate of said joint, and positioning means ensuring a relative constant positioning of said surfaces with respect to one another when they return to abut against one another via the action of the elastic recall means following a relative separation between these surfaces.

5,082,213

AIRCRAFT LOCK FOR RADIOS, POWER CONTROLS, AND FLIGHT CONTROLS AND METHOD

Ramon L. Torres, 4633 SW. 13th Ter., Miami, Fla. 33134

Filed Jul. 10, 1990, Ser. No. 551,626
Int. Cl.[5] B64C *13/14*
U.S. Cl. 244—224 **7 Claims**

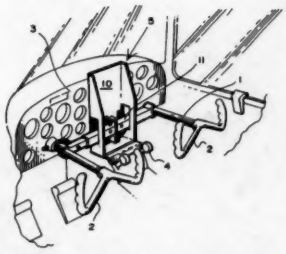
1. A combination radio lock, power control lock, and gust lock for use on dual controlled aircraft having parallel control columns comprising, in combination,

a center lock bar having an interior adaptable to receive locking arms,

a pair of locking arms having remote ends proportioned to adjustably engage the center lock bar,

control shaft grips for engaging the parallel control columns each mounted at the remote ends of the locking arms,

means for securing at least one of said control shaft grips to a control shaft column by penetrating the same,



a radio lock pan having a base plate portion and opposed sidewalls, and openings on its sidewalls for the pass-through of the center lock bar,

power control lock means secured at the lower portion of the radio lock pan,

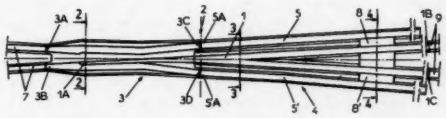
and a lock for engaging the center lock bar and having means for securing the center lock bar, the radio pan, and the engine control lock plate in position and immovably mobilizing all of the elements set forth above.

5,082,214

CROSSING FROG WITH A MOVING POINT

Gérard Testart, Andresy, France, assignor to Cogifer (Cie Generale d'Installations Ferroviaires), S.A., Rueil Malmaison, France

Division of Ser. No. 421,197, Oct. 13, 1989, Pat. No. 5,042,755.
This application Oct. 31, 1990, Ser. No. 605,090
Claims priority, application France, Oct. 14, 1988, 88 13723; Dec. 12, 1988, 88 16515; Dec. 12, 1988, 88 16516
Int. Cl.[5] E01B *7/10, 7/14*
U.S. Cl. 246—385 **11 Claims**



1. A crossing frog with a moving point (1), for very long railway switches incorporated in long welded rails (7 and 9), said crossing frog comprising,

a cradle (2) in two elements (3 and 4), one molded and the other non-molded, wherein the molded element (3) is of molded steel and has at least two ends (3A and 3B) on a point side and two ends (3C and 3D) on a heel side which are shaped as rail profiles, but only the rail profile of the two ends (3A and 3B) on the point side effectively serving as rolling surfaces,

the non-molded element (4) being mainly made up of parts (5 and 5') produced integrally to include rearwardly diverging rails and connected to the two ends (3C and 3D) on the heel side of the molded element (3), but neither of the rail profiles of the two ends (3C and 3D) on the heels side of the molded element (3) nor said parts (5 and 5') of the non-molded element (4) effectively serving as rolling surfaces,

the moving point (10) having upper faces and being produced integrally as rails of which all the upper faces effectively serve as rolling surfaces.

5,082,215

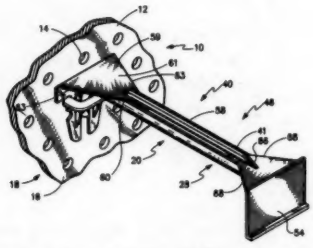
DISPLAY BRACKET WITH LIVING HINGE

V. James Hutchison, 1949 S. Robb Way, Lakewood, Colo. 80227

Continuation-in-part of Ser. No. 377,524, Jul. 10, 1989, Pat. No. 5,012,997. This application Feb. 16, 1990, Ser. No. 481,571

Int. Cl.[5] A47G *29/10*

U.S. Cl. 248—220.4 **24 Claims**



1. In a product display system wherein a support panel has a front surface and a back surface and a plurality of spaced-part mounting holes extending therethrough and wherein product support brackets are mountable on said support panel in order to hold products thereon for display, each said product support bracket including a mounting base to be positioned adjacent said front surface, at least one prong adapted to extend through a selected mounting hole and operative to mount said mounting base to said support panel in a mounted state and a product support arm connected to said mounting base and extending forwardly of said front surface, said product support arm terminating in a free end when said product support bracket is in the mounted state whereby products may be received and supported for display on said product support bracket, the improvement comprising an information display bracket adapted to be fastened relative to said support panel and said product support bracket when said product support bracket is in the mounted state, said imformation display bracket including a base member formed with a selected first thickness adapted to be positioned proximate said mounting base, fastening means for fastening said base member in a fastened state relative to said support panel and said mounting base, a display arm formed with a selected second thickness and having a proximal end and a distal end, a living hinge structure formed with a selected third thickness less than both the first and second thicknesses, said living hinge structure interconnecting said base member and the proximate end of said display arm whereby said display arm may freely pivot with respect to said base member, and an information display plate at the distal end of said display arm, said display arm extending forwardly of said front surface in the fastened state.

5,082,216

PIPE HANGER ASSEMBLY

Steven Roth, 2891 Danville Blvd., Alamo, Calif. 94507

Filed Dec. 3, 1990, Ser. No. 622,490

Int. Cl.[5] F16L *3/00*

U.S. Cl. 248—62 **5 Claims**

1. A pipe hanger assembly for hanging a pipe from a pipe-hanger support comprising:

a hanger having a pipe engaging element at the lower portion thereof;

first and second legs made from springy material extending generally upwardly from opposite ends of said pipe engaging element;

first and second shoulder elements extending toward each other in a generally horizontal direction respectively from the upper portions of said first and second legs and terminating in first and second edges spaced from each other a distance greater than the maximum dimension of said hanger support;

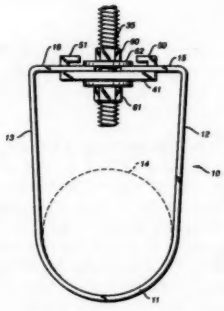
first and second slots located respectively in said first and second shoulder elements, said first and second slots terminating short of said first and second edges and having their long directions generally symmetrical about a common axis;

a holding element having

means to connect to said hanger support

first and second diametrically opposed lateral extensions extending from said means to connect to said hanger support;

first and second upward extensions located respectively at the end of each of said first and second lateral extensions;



first and second locking elements located respectively at the upper end of said first and second upward extensions and extending toward one another a distance shorter than the length of said first and second slot, and spaced from said lateral extensions a distance greater than the thickness of said first and said second shoulder elements, said upward extensions and said locking extensions being narrower than the widths of said slots, said upward extensions elements through said slots whereby when said springy legs are biased toward each other said locking elements superimpose said slots and when said springy legs are biased away from each other a portion of each of said shoulder elements is superimposed by one of said locking elements.

5,082,217

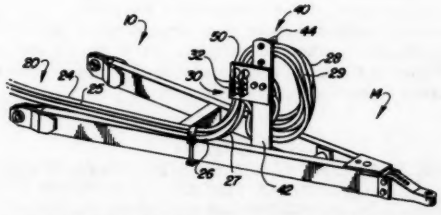
HYDRAULIC HOSE SUPPORT FOR AN IMPLEMENT

Paul D. Parker, Ankeny, and Fred C. Livesay, Jr., Des Moines, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Mar. 27, 1991, Ser. No. 676,055

Int. Cl.[5] A62C *13/76*

U.S. Cl. 248—75 **7 Claims**



1. In am implement having a frame adapted for towing by a vehicle in an area with substantial amounts of dirt and other contaminants, the implement having a hydraulic system with hoses and hose couplers located on the hose ends and adapted

for connection to and disconnection from a source of hydraulic fluid on the towing vehicle, the hose couplers being generally cylindrical in configuration with an annular groove, hose support structure comprising:

a coupler support having a slot therein of width approximately equal to the outer diameter of the coupler groove, the slot having an input area at one end thereof for receiving at least one of the couplers and facilitating receipt of the annular groove by the slot when the coupler is disconnected from the source, wherein the coupler when received in the slot projects into an area located outwardly from the support;

means for connecting the coupler support to the implement with the slot extending downwardly from the input area for slidably receiving and supporting the hose ends above the implement frame; and

wherein the outwardly located area into which the coupler projects is substantially open and non-confining to the contaminants so that build-up of the contaminants in said area is eliminated.

5,082,218

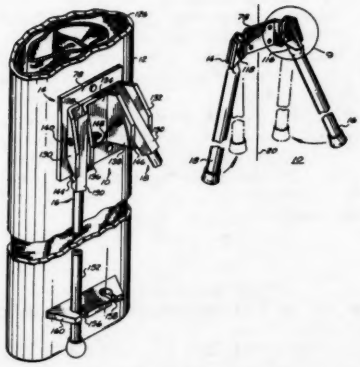
CONTAINER STAND

Ronald W. Hoffman, 10431 W. Catalina, Phoenix, Ariz. 85039

Continuation-in-part of Ser. No. 465,962, Jan. 16, 1990, abandoned, which is a division of Ser. No. 309,217, Feb. 13, 1989, Pat. No. 4,898,352. This application Jul. 13, 1990, Ser. No. 560,164

Int. Cl.[5] A63B *55/00*

U.S. Cl. 248—96 **14 Claims**



1. A supporting apparatus for attachment to an object to selectively position said object in an upright orientation, said supporting apparatus comprising:

(a) a bracket having an attachment plate securable to said object, said attachment plate defining a weight-supporting line, and including

(i) a first pair of parallel spaced apart ears, each of said ears in said first pair secured proximate a first side of said attachment plate, and

(ii) a second pair of parallel spaced apart ears, each of said ears in said second pair being secured proximate a second side of said attachment plate at an angle thereto;

(b) a first leg pivotally mounted between said ears in said first pair so that said first leg selectively resides in one of a first position generally parallel to said weight-supporting line and a second position at an acute angle to said weight-supporting line;

(c) a second leg pivotally mounted between said ears in said second pair so that said second leg selectively resides in one of a first position generally parallel to said weight-supporting line and a second position at an acute angle to said weight-supporting line, said second leg being at an angle with said first leg when said first and second legs are in said second positions;

(d) biasing means for urging said first and second legs toward said second positions;

(e) retaining means for holding said first and second legs in said first position against the urging of said biasing means; and

(f) stop means for limiting rotation of said first and second legs relative to said attachment means so that movement beyond said second positions of said first and second legs is prohibited.

5,082,219

DEVICE FOR KEEPING A BAG MOUTH OPEN AND HOLDING THE BAG AGAINST A VERTICAL SURFACE OR A POLE

Norman Blair, 202 Old Glenarm Road, Larne, BT 40 1TT, Northern Ireland

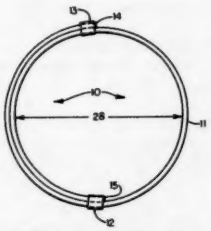
PCT No. PCT/GB88/00648, § 371 Date Feb. 15, 1989, § 102(e) Date Feb. 15, 1989, PCT Pub. No. WO89/01441, PCT Pub. Date Feb. 23, 1989

PCT Filed Aug. 5, 1988, Ser. No. 465,114

Claims priority, application United Kingdom, Aug. 20, 1987, 8719643

Int. Cl.[5] B65B *67/00*

U.S. Cl. 248—99 **1 Claim**



1. A device to retain the mouth of a bag open comprising:

an elongated belt having sufficient flexibility to bend over on itself to form a ring with radial inner and outer opposite sides and with both ends of the belt overlapping each other, and being of sufficient stiffness to be self-containing or self-supporting in any variation of ring diameter, and two holding means for releasably and engageably holding an end adjustably to the belt;

the holding means are provided each in the form of a sleeve one at each end of the belt and each is such that, with the periphery of the mouth of the bag folded over the annular member, the diameter of the ring can be varied after the mouth of the bag is folded thereover by moving at least one end along the belt relative to the other end to expand the ring to press against the bag such that the material thereof stretches and grips the ring, the mouth of the bag being circumferentially held by said ring in a position of adjustment by securing means of the sleeve;

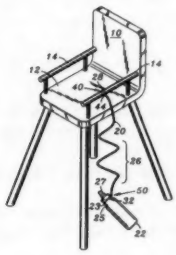
each of said sleeves having a belt end retaining portion and a through passage with a surface portion between said retaining portion and said through passage, one end of said belt connected within said retaining portion, an intermediate portion of said belt is held in said through passage adjacent to one end of said belt, said intermediate portion of said belt being held slidable in said through passage, the relative shaping and dimensioning of the belt and said through passage being such that said intermediate portion is securable in said through passage when the expanded condition of use of said belt causes a resultant reactive pressure between said intermediate portion of said belt and said through passage as said intermediate portion of said belt is tilted within said through passage to frictionally restrict movement of said belt sufficiently to prevent reduction in diameter of said belt by said bag.

5,082,220

RESTRAINING DEVICE

Debra G. Pollock, 2221 Avenida Oliva, and Robert B. Nealy, P.O. Box 3154, both of San Clemente, Calif. 92672

Filed Nov. 19, 1990, Ser. No. 615,287
Int. Cl.[5] A47D *15/00*
U.S. Cl. 248—104 **9 Claims**



1. A restraining and securing device for an object such as an infant's bottle, a cup, a pacifier and the like, said device comprising

a flexible, resilient, elongated member having ends defining a grasping end and an attachment end opposite said grasping end;

a stand-off connector affixed to each end of said elongated member;

adjustable attachment means carried by one of said stand-off connectors for removably securing the device to a fixed object thereby to define said attachment end of said device;

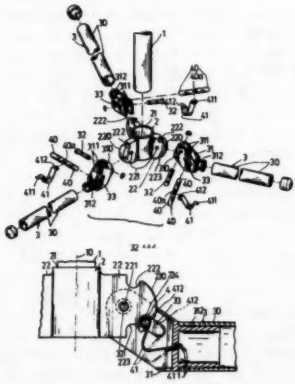
resilient grasping means for retaining said object to be restrained and secured by said device carried by said other stand-off connector thereby to define said grasping end of said device.

5,082,221

SYMMETRICALLY-ACTUATED ADJUSTABLE LEG ASSEMBLY

Shih-Wang Lai, P.O. Box 55-1670, Taipei (10477), Taiwan

Filed Jan. 3, 1991, Ser. No. 637,207
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—168 **3 Claims**



1. An adjustable leg assembly comprising:

a vertical tubular support;

a connector having a sleeve member formed on a central portion of said connector for securing a lower end of said vertical tubular support in said sleeve member and a plurality of arcuate lugs radially formed on a cylindrical surface of said sleeve member, each said arcuate lug having an arcuate cam portion formed on an outer portion of said lug having a plurality of positioning recesses circumferentially formed on the arcuate cam portion of said lug and a pivot hole formed in said lug and positioned at a center of said arcuate cam portion; and

a plurality of leg members each said leg member radially pivotally secured to each said lug of said connector by a pivot passing through said pivot hole in said lug, each said leg member having a positioning pin member resiliently and slidably held in said leg member adapted for pulling said pin member to be slidably moving on said arcuate cam portion of said lug to be engageable with any said positioning recess for adjusting an angle between each said leg member and said vertical tubular support for adjusting a height of said leg member and said tubular support, or for folding said leg member toward said support;

the improvement which comprises:

each said leg member including: a radial tubular member having its inner end portion secured with a forked joint, two bifurcate plates bifurcated from said forked joint having a pair of aligned pivot holes formed in an inner portion of each said bifurcate plate for pivotally securing said joint to said lug by said pivot passing through said lug of said connector and said pair of aligned pivot holes in said bifurcate plates, and two radial slots symmetrically formed in said two bifurcate plates on two outer portions of said aligned pivot holes, each said positioning pin member slidably held in said two radial slots in said forked joint; and

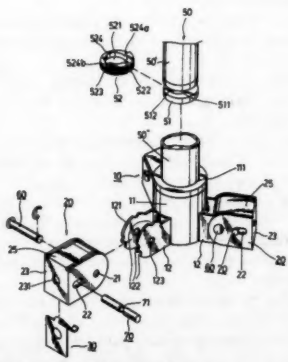
each said positioning pin member including two side end portions laterally protruding rightwardly and leftwardly through two said radial slots in said forked joint of said leg member adapted to be pulled by a user's fingers, a central neck portion formed on a central portion of said pin member, and a tensioning spring having an inner end of said spring secured to said central neck portion of said pin member and an outer end of said spring secured to said forked joint for normally resiliently urging said pin member on said arcuate cam portion of said lug of said connector to be slidably engageable with any said positioning recess formed in said cam portion.

5,082,222

SUPPORTING DEVICE

C. C. Frank Hsu, No. 28, Chung-Hsing E. Rd., Tai-Ping Hsiang, Taichung Hsien, Taiwan

Filed Dec. 11, 1990, Ser. No. 625,475
Int. Cl.[5] F16M *11/38*
U.S. Cl. 248—170 **2 Claims**



1. A supporting device comprising:

a vertical tubular support means having a top end to be connected to an article to be supported and a bottom end;

a connected member which is sleeved on said bottom end of said vertical tubular support means, said connecting member having a periphery and a plurality of lug members outwardly extending from said periphery in an equally spaced relation, each of said lug members having a pivot hole and an arcuate edge with a plurality of angularly spaced notches each of which notches open away from said pivot hole;

a plurality of engaging members each of which is U-shaped in cross-section and has a positioning pin, a first and a second opposite parallel plate pivotally mounted at said pivot hole of one of said lug members of said connecting member to sandwich it, and a base interconnecting said first and second plates, said first and second plates having aligned oblong openings therein the long axes of which extend toward said pivot hole of the said lug member to which said first and second plates are pivotally mounted, said positioning pin passing through said oblong openings with the two ends of said positioning pin extending outward from said first and second plates, said positioning pin being laterally slidable in said aligned oblong openings to engage one of said notches of said lug member for preventing said engaging member from rotating about said lug member;

a plurality of resilient means each of which is disposed in one of said engaging members to urge said positioning pin of said one of said engaging members to engage one of said notches of said one of said lug members; and

a plurality of legs each of which is mounted to one of said bases of said engaging members;

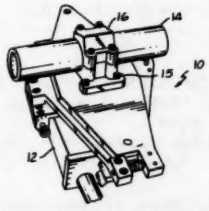
whereby, the angular position of each of the legs, relative to said connecting member, can be selectively varied and fixed wherein each said resilient means includes a plate disposed against said base of one of said engaging members and a strap with a curved end extending from said plate at an acute angle, said curved end embracing the respective positioning pin.

5,082,223

ADJUSTABLE MOUNTING ASSEMBLY FOR ELECTRO-OPTICAL DEVICES

Leroy E. Ording, Northville, and Otto W. Freitag, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 17, 1990, Ser. No. 628,032
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—183 **2 Claims**



1. An adjustable mounting assembly for adjusting an electro-optical inspection device secured to a substantially fixed carrier about two mutually orthogonal axes, comprising:

a bracket adapted to be secured to said inspection device, said bracket including:

a pair of aligned taps at one end, each tab having an aperture therethrough and defining a space therebetween; and

a stepped surface at a second end thereof having a pair of guide posts projecting therefrom;

a first substantially planar plate pivotably secured to said bracket by a first fastening member, said first fastening member defining a first of said two mutually orthogonal axes, said plate including;

a tab adapted to be interposed between said tabs of said bracket and including an aperture for receiving said first fastening member therethrough;

a pair of apertures for receiving said pair of guide posts therein to align said first plate relative to said bracket;

an adjustment block having an aperture therethrough for cooperating engagement with a second substantially planar plate; and

a slotted aperture disposed on a planar surface thereof;

first adjustment means disposed between said first plate and said bracket for adjusting said bracket relative to said first plate about said first axis, said means including a threaded nut fastener having a spring circumferentially disposed therearound;

a second substantially planar plate attached to said first plate by a second fastening member, said second fastening member defining a second of said two mutually orthogonal axes, said plate including a pin projecting from a planar surface thereof and adapted to engage said slotted aperture of said first plate to limit the relative movement of said first and second plates about said second axis;

second adjustment means engaging said first and second plates for adjusting said first plate relative to said second plate about said second axis, said adjustment means comprising a threaded nut fastener having a spring circumferentially disposed therearound; and

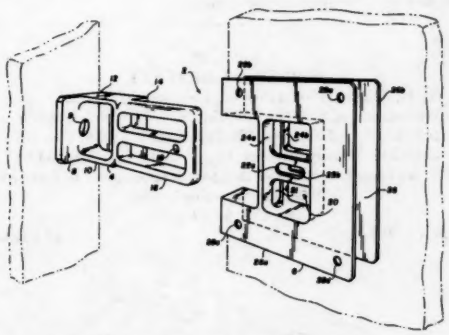
a clamp secured to said second plate operative to fixedly engage said fixed carrier.

5,082,224

AIRCRAFT PARTITION MOUNTING DEVICE

Joseph H. Hayward, 8416 Yolanda Ave., Northridge, Calif. 91324

Filed Feb. 23, 1990, Ser. No. 483,899
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—224.3 **5 Claims**



1. A device for installing and securing a removable partition inside an aircraft, said device comprising:

(a) a vertically disposed support member, including a generally flat base plate member, first and second side walls integrally formed with said base plate member and extending generally normal thereto along the respective side edges of said base plate member, a rear wall member integrally connected to said base plate member and said first and second side walls, a top member integrally formed with said rear wall and first and second side walls, and an elongated shank member integrally formed with and generally normal to said top member and containing a vertically extending opening therein, and;

(b) a partition fitting generally wider than the width of said support member, including a slotted opening adapted for slidably receiving a substantially vertically disposed said

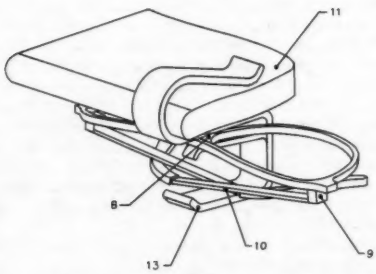
elongated shank member in releasable connection therewith, a peripheral channel integrally formed about the top and both sides of said partition fitting for attachment to a removable partition and spaced elongated vertically extending slots that align with the opening in said shank member for receiving a means there through to secure said support member and said partition fitting when forming a joined connection.

5,082,225

CLIP FOR SECURING EYEGLASSES TO A SUNVISOR

Livio S. Nespoli, 1518 Cole Creek Dr., Omaha, Nebr. 68114

Filed Jan. 8, 1990, Ser. No. 461,983
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—231.8 **4 Claims**



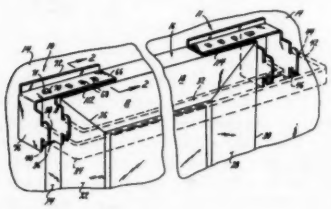
1. Apparatus for securing eyeglasses to a sunvisor, the apparatus comprising a S-shaped body having a top, center and bottom portion; the top portion extending outwardly from the center portion and then inwardly toward the center portion forming a clamp for securing the body to the sunvisor; the bottom portion extending outwardly from said center portion forming a base for receiving the front area or the temples of the eyeglasses; a leg extending outwardly from said center portion and located between the top and the bottom portions, said leg forming a clip adapted to support in cooperation with the base the bridge or temples of the eyeglasses.

5,082,226

UNIVERSAL BRACKET

Larry G. Mahan, 14 Greenwood, Lebanon, Mo. 65536

Continuation of Ser. No. 439,631, Nov. 21, 1989, which is a continuation of Ser. No. 208,160, Jun. 17, 1988, Pat. No. 4,889,305. This application Aug. 6, 1990, Ser. No. 563,862
The portion of the term of this patent subsequent to Dec. 26, 2006, has been disclaimed.
Int. Cl.[5] A47H *1/10*
U.S. Cl. 248—265 **18 Claims**



1. A bracket, comprising:

bracket support means for supporting the bracket on a top and side portion of a trim member;

accessory support means for supporting an accessory, the accessory support means including a supporting configuration for supportably receiving the accessory; and

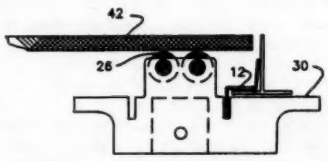
framing means sub-assembly defined by the accessory support means for providing a substantially rigid substructure, wherein the substantially rigid substructure is at least partially supportable by a wall portion adjacent a side of the trim member as a result of the weight of the accessory supported by the bracket, which accessory weight further results in improved support of the bracket and accessory.

5,082,227

HANGER AND TOOL FOR SUSPENDED CEILINGS

Leo J. Insko, Springfield, Mo., assignor to Panel-Lok Hangers, Inc., Springfield, Mo.

Filed Jul. 23, 1990, Ser. No. 556,289
Int. Cl.[5] B42F *13/00*
U.S. Cl. 248—343 **14 Claims**



1. A hanger and overhead suspended ceiling comprising in combination: a ceiling having beams and ceiling panels,, the beams having at least one horizontal supporting surface and an upstanding vertical surface, the ceiling panels having perimeter portions adapted to rest upon the horizontal supporting surface, the ceiling panels further having an edge around their perimeters, the hanger comprising:

a horizontal member supported by the horizontal supporting surface of the beam,

first and second substantially vertical projections connected to the horizontal member and extending therefrom in opposite directions, the first vertical projection being an upstanding rectangular plate, the horizontal member and rectangular plate connected along a common edge and defining a corner which receives the edge of the ceiling panel, the first vertical projection further having two sides, one side adapted to engage the edge of the ceiling panel and the other side engaging the upstanding vertical surface of the beam, the second vertical projection being a downturned second rectangular plate with a receiving hole therein, the horizontal member and second rectangular plate connected along a common edge, the horizontal member and two vertical projections defining a Z-shaped cross-sectional configuration, whereby angular and rotational movement of the hanger is restricted by the hanger being retained between the edge and perimeter portions of the ceiling panel and the upstanding vertical and horizontal supporting surfaces of the beam.

5,082,228

SEAT ADJUSTER FOR VEHICLE SEAT

Mitsuo Shimazaki, Akishima, Japan, assignor to Tachi-S Co., Ltd., Akishima, Japan

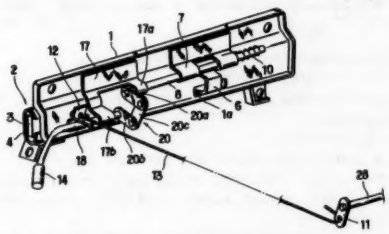
Filed Apr. 16, 1991, Ser. No. 686,191
Int. Cl.[5] F10M *13/00*
U.S. Cl. 248—430 **6 Claims**

1. A seat adjuster for use in an automotive seat, which has a pair of slide rails each being composed of a movable rail on which the seat is mounted and a fixed rail to be fixed to a floor of an automobile, wherein one of said pair of slide rails constitutes a center-side slide rail disposed adjacent to a center line extending centrally of and in a length-wise direction of said automobile, and another of said slide rails constitutes a door-side slide rail disposed adjacent to a door of said automobile, said movable rail being slidably fitted in said fixed rail, and further has a pair of locking mechanisms each being provided at the respective said two slide rails, said pair of locking mechanisms being actuatable together in an interlocking way so as

to unlock and lock said movable rail against said fixed rail in both said two slide rails, to thereby permit adjustment of said seat in a fore-and-aft direction, said seat adjuster comprising:

a first shaft disposed at said center-side slide rail, said first shaft being connected with one of said pair of locking mechanisms which is provided at said center-side slide rail;

a second shaft disposed at said center-side slide rail, said second shaft being provided with an operation handle integrally and being located at a lower level than said first shaft;



a link mechanism interposed between said first and second shafts, wherein through said link mechanism, said second shaft is operatively connected to said first shaft;

a third shaft disposed at said door-side slide rail, said third shaft being connected with another of said pair of locking mechanisms which is provided at said door-side slide rail; and

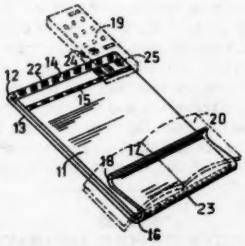
an interlocking means provided between said second shaft and said third shaft, wherein through said interlocking means, operation of said operation handle causes both said first and third shafts to be rotated, thereby actuating said pair of locking mechanisms together in interlocking way.

5,082,229

HOLDER FOR RCS, SCHEDULE GUIDE, AND MAGAZINE EMPLOYS TRANSPARENT RIGID SHEETS AND TEMPORARY FASTENERS

Robert M. Dahl, 108-A Castle Rock Rd., Walnut Creek, Calif. 94598

Filed Jul. 2, 1990, Ser. No. 547,865
Int. Cl.[5] A47F *5/00*
U.S. Cl. 248—444.1 **20 Claims**



12. A holder for holding and displaying electrical accessories and a schedule guide, comprising:

a transparent sheet of rigid material,

means for holding a sheet of paper comprising a schedule guide against one side of said transparent sheet, said means comprising a second sheet of rigid material and means for holding said second sheet against the opposite side of said transparent sheet,

means for enabling a plurality of portable electrical devices to be attached to said opposite side of said transparent sheet, and

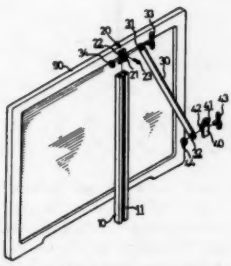
means for holding and displaying a book or magazine against said opposite side of said transparent sheet.

5,082,230

ADJUSTING DEVICE FOR A FRAME PRODUCT

Houn I. Chang, No. 24, Hsi Tou Rd., Hsi Pan Village, Hsi Chou Hsiang, Chang Hua Hsien, Taiwan

Filed Nov. 21, 1990, Ser. No. 616,616
Int. Cl.[5] A47G *1/08*
U.S. Cl. 248—476 **3 Claims**



1. An adjusting device for a frame product comprising a channel having a front surface vertically fixed to a rear surface of said frame product, said channel being substantially a hollow tube having a slot longitudinally formed in a rear surface thereof; a guide slidably received in said channel and having a first screw hole formed therein for threadedly receiving a first screw so that said guide can be fixed to said channel; a first lug integrally and perpendicularly formed on said guide and extending outwardly from said slot of said channel; a link having a first end coupled to said first lug by a second screw and a first nut; a hanger having a key hole formed therein for engagement with a nail which is fixed on a support surface; a second lug integrally and perpendicularly formed on one side of said hanger, said link having a second end coupled to said second lug by a third screw and a second nut; one side of each of said first lug and said second lug having an embossment formed thereon, and one side of each end of said link having an embossment formed thereon, said embossments of said first lug and said second lug and said link facilitating an engagement between said first lug and said link and an engagement between said second lug and said link; a relative angle between said channel and said link can be adjusted by said second screw and said first nut, and a relative angle between said link and said hanger and said support surface can be adjusted by said third screw and said second nut so that said frame product can be easily adjusted to a suitable angle relative to said support surface; said frame product can be stably hung on said support surface by its own weight and by a friction between said frame product and said support surface.

5,082,231

POST HOLDER AND MARKER THEREFOR

John R. Knowles, 346 Hickroy Tree Rd., Plymouth, Wis. 53073

Filed Jan. 22, 1991, Ser. No. 643,367
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—545 **1 Claim**

1. A post-support for permanent installation at or below ground level for temporarily supporting a removable post in a generally upright vertical position, said post-support including:

a post-receiving collar,

a ground-engaging member secured to said collar,

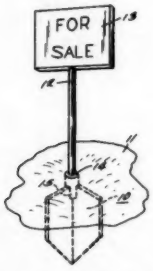
and a driver/cap/marker removably engaged in said collar,

said ground-engaging member including at least two fins having tapered edges terminating in a mutual point and rigidly secured to said collar,

each fin having a lateral collar-supporting edge disposed beneath the bottom edge of said collar,

said driver-cap/marker including a sleeve adapted to fit within said collar, and also including a flat cap suitable for a driving surface,

said sleeve adapted to be driven into the ground so as to cut a plug of ground which can be removed by and with the sleeve when the sleeve is withdrawn from the ground,



said sleeve having a vertical length substantially the same as the length of said collar so that the underside of said flat cap touches the top edge of the collar when the sleeve is disposed within the collar and the lower end of the sleeve engages the collar-supporting edges of fins.

5,082,232

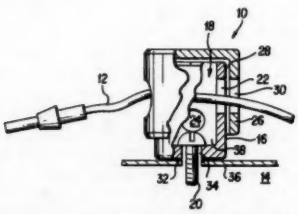
CABLE LOCK

Edwin P. Wilson, Allison Park, Pa., assignor to Minatronics Corporation, Pittsburgh, Pa.

Filed Mar. 6, 1990, Ser. No. 489,049

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—551 **1 Claim**



1. An apparatus for linking a cable to an object comprising:

a first element having a first channel disposed along the axis of the first element and passing therethrough which receives a connector that fixedly links the first element to the object, said first element also having a second channel passing therethrough which perpendicularly intersects the first channel and through which the cable extends;

a second element having a chamber and a third channel passing therethrough and intersecting the chamber such that the chamber can receive the first element, and with the second channel and third channel in parallel alignment so the able can extend through the first element and second element by way of the second channel and third channel;

the first channel having a first diameter in proximity to the end of the first channel which contacts the object such that the connector links the first element to the object by grasping the first element at the start of the first diameter of the first channel; and also having a second diameter which is large enough to receive the connector along the connector's axis; and

a blocker disposed in the first channel for preventing the connector from being removed and preferably in the shape of a ball having a diameter smaller than the second diameter but larger than the first diameter of the first channel.

5,082,233

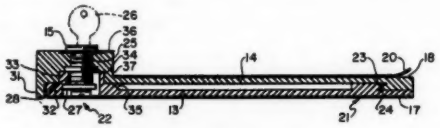
EQUIPMENT HOLD-DOWN APPARATUS

Gary M. Ayers, 13054 Bradwell Ave., Sylmar, Calif. 91342, and Paul A. Thomas, 408 Meyer St., San Fernando, Calif. 91340

Filed Apr. 27, 1990, Ser. No. 515,635

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—553 **1 Claim**



1. A hold-down apparatus comprising:

an article of office equipment;

a support member attached to the underside of said office equipment;

a flat furniture top;

a base member attached to said furniture top;

retention means releasably interlocking respective opposite ends of said support member and said base member together;

said support member and said base member having adhesive surfaces engageable with said office equipment and said base member respectively;

said retention means includes a hook arrangement releasably coupling one pair of adjacent ends of said support member and said base member; a locking arrangement releasably coupling adjacent ends of a second pair of ends of said member and said base member opposite to said one pair;

said hook arrangement including each of said adjacent ends of said one pair terminating with a hook so as to interlock with a hook on the opposite one of said members, said hooks laterally slidable with respect to each other to effect engagement and disengagement;

said locking arrangement including a raised annular portion with an opening on a selected end of said second pair carried on said base member facing the other end of said second pair, said opening having a notch in said raised annular portion in communication with opposite ends of a circular undercut;

said locking arrangement further including a movable latch having an outwardly extending lug, said latch downwardly depending from said end of said support member of said second pair and said lug insertable into said base member portion opening responsive to alignment and registration of said lug with said opening notch whereby lateral rotation of said latch places said lug beneath said undercut to retain said second pair of ends together;

said end of said support member second pair having a circular aperture for insertably receiving said base member raised portion when said latch lug and said portion opening notch are registered and in alignment; and

said hooks and said latch lug in engagement with said raised portion notch constituting a releasable retention of said base member and said support member together.

5,082,234

ROUTER SUPPORT APPARATUS

Glen F. Smith, Rte. 4, Box 1932, Athens, Tenn. 37303

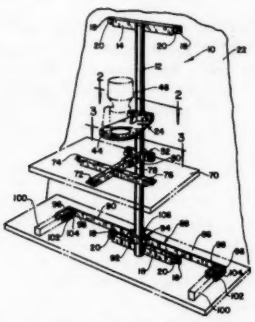
Filed May 24, 1990, Ser. No. 528,243

Int. Cl.[5] B23P *23/00*

U.S. Cl. 248—669 **10 Claims**

1. Apparatus for supporting a router for use above a work support table, said apparatus comprising a cylindrical column, beam means secured to said column, bolt means for securing said beam means to a fixed structural wall of a workshop or the like with said column in a vertical disposition spaced from said wall, a router support bracket including a router support plate and clamping means for adjustably attaching said bracket to

said column for vertical movement relative thereto, said clamping means including a clamping wall fixed to and upstanding relative to said plate from one end of said plate, said clamping wall including a substantially centrally disposed arcuate portion conforming to the contour of said column, and a clamp member having a wall including an arcuate portion conforming substantially to the contour of said column, means for securing said clamping wall and said clamp member together about said column with said arcuate portions abutting said column at selected vertical and rotated dispositions spaced from said structural wall, said plate having a circular edge spaced from said clamping wall and means defining an aperture spaced intermediate said edge and said clamping wall, means for fastening a router having a circular base to said plate with a router bit received through said aperture and with a portion of said base overlying said circular edge, a work table mounting bracket including table support means and table clamping means for attaching said table support bracket to said column



beneath said router support bracket, said table clamping means comprising a clamping wall including a substantially centrally disposed arcuate portion conforming to the contour of said column and a clamp member having a wall including an arcuate portion conforming to the contour of said column, means for securing together the clamping wall and the clamp member of said table support bracket about said column with the arcuate portions abutting said column at selected vertical and rotated dispositions beneath said router support bracket spaced from said structural wall, said table support means including first means fixed to the clamping wall of said table clamping means and extending from said column remote from said structural wall and second means adapted to be secured to the underside of a work support table, and connecting means for connecting said first and second means together selectively in a horizontal disposition with said second means spaced from said clamping wall and extending away from said column and in a vertical disposition with said second means extending substantially parallel to said column.

5,082,235

DISPLAY MOUNTED DOCUMENT HOLDER

Dale A. Crowther, Burley, Id., and William R. Isham, 9138 N. 6800 W., American Fork, Utah 84003, assignors to William R. Isham, American Fork, Utah

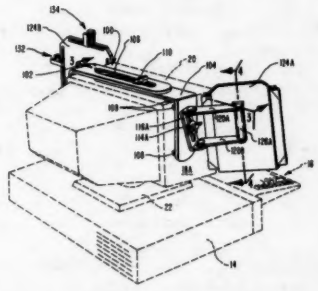
Filed May 30, 1989, Ser. No. 359,026
Int. Cl.[5] B41J *11/00*
U.S. Cl. 248—918 **33 Claims**

1. An apparatus for holding a document adjacent to a computer display which may be operated by a computer programmer, the computer display having substantially vertical sides, substantially horizontal sides, and a front panel, comprising:

attaching means for compressively gripping the computer display such that the positional relationship between said attaching means and the computer display remains fixed when force is applied thereto, said attaching means compressively gripping at least two opposing substantially vertical sides of the computer display;

holding means for holding a document in a configuration to allow viewing of the document, the holding means having peripheral edges; and

securing means for securing the holding means to the attaching means such that the holding means is movably-positionable adjacent to the display in a position viewable by a user of the computer display, the securing means having at least two spaced apart braces, each one of the at least two braces being pivotally attached to the rear of the



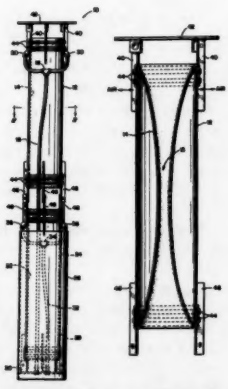
holding means between two of the opposing peripheral edges of the holding means so as to form a line of pivot at the attachment between the at least two braces and the holding means, each brace further being pivotally attached to the attaching means so as to provide separate lines of pivot at the attachment between the at least two braces and the attaching means, the first and separate lines of pivot being configured so as to provide for at least two degrees of planar movement by the holding means such that the holding means may be moved sideways and back and forth in a horizontal plane relative to the computer display and the computer programmer.

5,082,236

TABLET OR CAPSULE DROP TUBE ASSEMBLY

Delmar R. Wiese, Springfield, Mo., assignor to Custom Metalcraft Inc., Springfield, Mo.

Filed Jul. 9, 1990, Ser. No. 549,915
Int. Cl.[5] F16K *7/02*
U.S. Cl. 251—5 **5 Claims**



1. A tablet or capsule drop tube assembly including upper and lower portions, each portion comprising:

an outer tube;

an inner tube of a flexible material of uniform thickness throughout the length thereof secured to said outer tube at opposite end portions so as to provide an airtight chamber between said inner and outer tubes;

means for introducing air under pressure between said inner and outer tubes to cause a passageway interior of said inner tube to be constricted;

means for exhausting air from between said inner and outer tubes; and

means for sequentially actuating the two portions.

5,082,237

STEAM TRAP

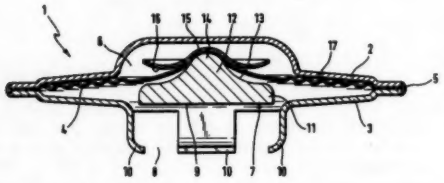
Ohannes Ayvaz, Istanbul, Turkey, assignor to Haci Ayvaz, A.S., Istanbul, Turkey

Filed Dec. 7, 1990, Ser. No. 624,237

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1989, 3940775

Int. Cl.[5] F16K *31/126*

U.S. Cl. 251—11 **10 Claims**



1. Steam trap comprising:

a casing formed from two disk-like wall portions;

a diaphragm positioned between the two wall portions, the diaphragm having an outer edge welded to the two wall portions and forming, with one of the wall portions, a chamber for receiving an expansion medium, the diaphragm also having a central depression;

a closure having a cylindrical partial body cooperating with a valve seat through an opening in another of the wall portions, a tapering, conical rotating body extending from the cylindrical partial body, and a spherical portion extending from the conical rotating body, the central depression of the diaphragm receiving the spherical portion of the closure; and

a counterpart disposed in the chamber and having a depression receiving the depression of the diaphragm so that the diaphragm is positioned between the counterpart and the spherical portion of the closure,

the closure, the diaphragm and the counterpart being interconnected.

5,082,238

NONJAMMING VACUUM VALVE HAVING TAPERED PLUNGER

John M. Grooms, Rochester, and Mark A. Jones, Cloverdale, both of Ind., assignors to Burton Mechanical Contractors

Continuation of Ser. No. 366,585, Jun. 15, 1989, abandoned. This application Aug. 30, 1990, Ser. No. 576,179

Int. Cl.[5] F16K *31/126*

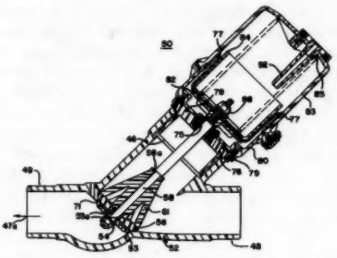
U.S. Cl. 251—61.5 **11 Claims**

1. In a vacuum sewerage transport system, including a control valve having an open position and a closed position, said control valve comprising:

a valve body having an entry opening and exit opening;

a valve stop in the valve body disposed to separate the openings when said valve is in the closed position;

a rigid valve plunger disposed for reciprocating movement in the valve body relative to said valve stop to alternately open and close the valve, said plunger having a first end closest to said valve stop and a second end opposite said first end, said plunger having seating means on said first end of the plunger matable with said valve stop to provide closure of the control valve, said plunger having a diameter which is progressively and sharply reduced from the first end to the second end to facilitate opening of the valve and to eliminate jamming of the valve caused by accumulation of foreign objects; and



a coaxially disposed shaft connected at its first end to the first end of the rigid valve plunger and passing through the plunger, and at its second end to control means for selectively opening and closing said control valve in response to a predetermined condition of the sewerage transport system.

5,082,239

RADIAL FLOW VALVE ASSEMBLY

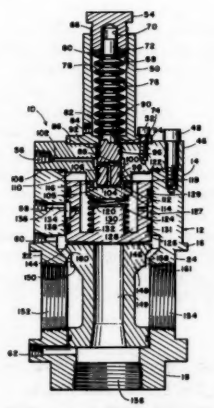
Eugene P. Feild, Webb City, Mo., assignor to Laminar Fluid Controls, Inc., Fort Wayne, Ind.

Continuation of Ser. No. 209,421, Jun. 20, 1988, Pat. No. 4,895,342. This application Jan. 22, 1990, Ser. No. 467,948

The portion of the term of this patent subsequent to Jan. 23, 2007, has been disclaimed.

Int. Cl.[5] F16K *47/04*

U.S. Cl. 251—120 **11 Claims**



1. A fluid valve assembly comprising:

a housing;

a first valve member mounted on said housing, said first valve member having a working face;

a second valve member received in said housing for movement toward and away from said first valve member responsive to pressure variations thereacross, said second valve member having a working face on one side thereof directed toward said first valve member and a rear face on the other side thereof;

a centrally located orifice extending into one of said valve members from the working face thereof;

inlet means formed in said housing for permitting a flow of fluid to a location adjacent the outer peripheries of said working faces;

means for communicating pressure on said second valve member working face to said rear face; and

a taper formed on at least one of said valve faces, said working faces forming an angle to one another of a size sufficient to substantially eliminate all pressure decrease between the outer peripheries of said working faces as said valve members approach one another when fluid is flowing therethrough.

5,082,240

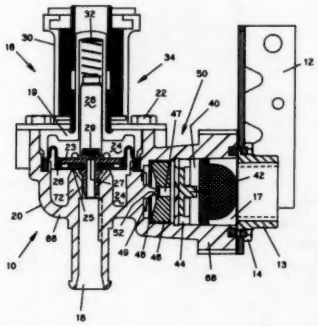
QUIET WATER VALVE

James W. Richmond, Indianapolis, Ind., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 12, 1990, Ser. No. 626,633

Int. Cl.[5] F16K *47/08, 47/02*

U.S. Cl. 251—120 **4 Claims**



1. A water valve comprising a housing having an inlet, a valving chamber, an outlet, and a sealing means located between said inlet and said outlet for alternatively permitting water to flow from said valving chamber to said outlet and stopping water from flowing from said valving chamber to said outlet, said water valve further comprising:

a water conduit formed in said housing:

flow control means located in said conduit between said inlet and said outlet for providing a substantially constant rate of water flow, said flow control means including flexible means for providing a flow control orifice that changes in size depending on water pressure and inflexible means for supporting said flexible means, said inflexible means having a aperture communicating with said orifice;

an expansion chamber located immediately downstream of said aperture;

a water exit port formed in said expansion chamber;

a raised lip formed about the periphery of said port and extending into said expansion chamber; and

a noise suppression bullet extending through said aperture and into said flow control orifice at all water pressures.

5,082,241

ANTINOISE BAFFLE FOR SCREW TYPE VALVES WITH CERAMIC DISK SEALS

Alessio Orlandi, Castiglione d/Stiviere, Italy, assignor to Galatron S.r.l., Castiglione d/Stiviere, Italy

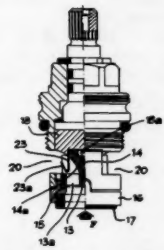
Filed Apr. 23, 1991, Ser. No. 689,967

Claims priority, application Italy, Apr. 24, 1990, 6976/90[U]

Int. Cl.[5] F16K *47/02, 3/08*

U.S. Cl. 251—127 **4 Claims**

1. An antinoise baffle especially for screw type valves having a hollow cylinder body designed to be screwed into a tap unit in line to a water delivery conduit, where said cylinder body, starting from the bottom, has an annular gasket (**17**), a first ceramic disk (**13**) fixed in the body with at least one hole (**13*a***) for the flow of water, a second ceramic disk (**14**) resting against and rotating on the first with at least one lateral slot (**14*a***) positionable in correspondence to and away from the one of the first disk following a quarter or half rotation of the second disk, an entrainer (**18**) fitted in the body of the valve so as to rotate and is splined to the second disk (**14**) in order to turn it, and a central rod (**19**) splined to the entrainer (**18**) and



having a manual knob so as to move the second disk through the entrainer, where the cylinder body and/or the entrainer also have radial openings (**20**) for the outlet of water towards a mouth, said baffle has at least one net (**21**) placed and blocked on the second disk (**14**) and having at least one wind which extends towards the first disk near to one or each lateral slot (**14*a***) of said second disk, the wings extending between said slot and the opening (**20**) for the outlet of water.

5,082,242

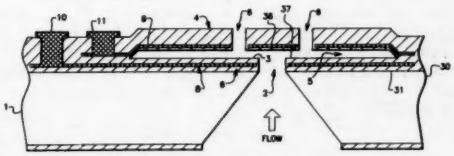
ELECTRONIC MICROVALVE APPARATUS AND FABRICATION

Ulrich Bonne, 4936 Shady Oak Rd., Hopkins, Minn. 55343, and Thomas R. Ohnstein, 1944 Hythe St., Roseville, Minn. 55113

Filed Dec. 27, 1989, Ser. No. 457,452

Int. Cl.[5] F16K *31/02*

U.S. Cl. 251—129.01 **10 Claims**



1. An electrostatic miniature valve comprising:

valve seat means having an opening therein through which the flow of fluid passes which is to be controlled and having a valve seat electrode portion in said valve seat means for receiving an operating potential in use;

valve means disposed adjacent to said valve seat means and having a closure plate member for overlaying said valve seat means and said opening, said closure plate member having flow-through hole means laterally displaced but immediately adjacent to said valve seat opening, said closure plate member also having a valve member electrode portion electrically isolated from said valve seat means electrode and mechanically operatively associated with it for receiving an operating potential in use; and

electrical insulator means disposed between said electrode portion of said valve seat means and said electrode portion of said closure plate member, said valve seat means electrode portion of said closure plate member electrode portion having mutually opposed areas and spacing therebetween, mutually opposed areas of said electrode portions and their spacing being dimensioned for allowing an electrical potential difference to be applied between said valve means and said valve seat means for pulling said closure plate member by electrostatic attraction against

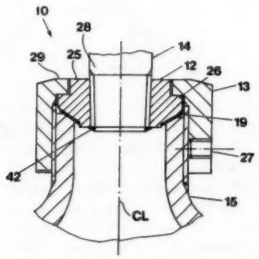
said opening and at least partially closing relation therewith for controlling the flow of fluid therethrough.

5,082,243

GAS CONTAINER, A COUPLING FOR A GAS CONTAINER, AND A METHOD OF MAKING A GAS CONTAINER

Göran Berglund, Sandviken; Gösta Lyen, Sollentuna, and Torsten Westberg, Svärdjö, all of Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed Nov. 22, 1989, Ser. No. 440,310
Claims priority, application Sweden, Nov. 24, 1988, 8804247
Int. Cl.[5] F16K *51/00*
U.S. Cl. 251—144 **7 Claims**



1. A coupling between a valve means and a container for enclosing pure gas under high pressure while resisting contamination thereof, said container having a neck defining a longitudinal center axis, said neck and said valve means including cooperating contact surfaces, one of said contact surfaces being of convexly curved shape as viewed in longitudinal section, the other of said contact surfaces being of convex spherical shape as viewed in longitudinal section, a sealing ring disposed between said contact surfaces, and a nut for securing said valve means to said container neck, whereby said sealing ring is compressed between said contact surfaces; said container comprised of a high strength stainless steel material containing ferrite and having a minimum strength of at least 400 N/mm^2 and a rupture elongation of at least 12 percent, an internal surface of said container forming a gas-containing chamber, said internal surface having a surface evenness such that the irregularities in said internal surface do not exceed 3 μm in height.

5,082,244

CARGO AIR BAG INFLATION VALVE AND INFLATOR COMBINATION

Martin Krier, and Henry L. Liebel, both of Cincinnati, Ohio, assignors to Shippers Paper Products Company, Loveland, Ohio

Filed Dec. 28, 1990, Ser. No. 636,064
Int. Cl.[5] F16L *37/28*
U.S. Cl. 251—149.6 **10 Claims**

1. A cargo air bag inflation valve and inflator combination comprising:

a tubular valve body having an air passageway therethrough adapted to be mounted in the wall of an air bag providing a passageway for compressed air between the exterior and the interior of said air bag for inflating said air bag,

valve closure means,

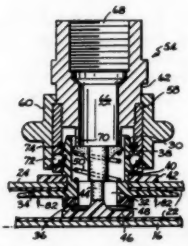
said valve body being movable with respect to said valve closure means between a valve closed position wherein said valve closure means forms a fluid seal with said valve body preventing flow of air through said passageway, and a valve open position wherein said valve closure means permits the flow of air through said passageway,

means providing a force biasing said valve closure means to a normal valve closed position,

the outer circumference of said valve body exterior of said air bag including a first surface, a detent-receiving surface, and a circumferential edge therebetween,

a quick connect/disconnect fitting adapted to be connected at one end to a source of compressed air and at the opposite end to receive said valve body, said fitting including an annulus, detent means mounted in said annulus and movable therein, detent locking means adapted to engage said detent means, and a shoulder radially inward of said annulus adapted to engage said valve closure means,

said valve being so dimensioned relative to said fitting that on receipt of said valve body in said opposite end of said



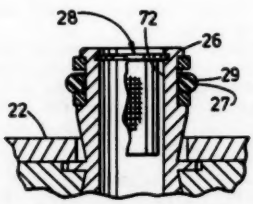
fitting and on application of said detent locking means overcoming said biasing force, said detents are caused to ride up and over said circumferential edge of said valve body and onto said detent-receiving surface, the movement of said detent means over said circumferential edge drawing said valve body into said fitting wherein said valve closure means engages said shoulder and displacing said valve body relative to said valve closure means to thereby open said passageway in said valve body permitting the flow of air through said fitting and said valve body passageway to inflate said air bag.

5,082,245

SPILL PROOF CHECK VALVE APPARATUS

Howard B. Kast, Fairfield, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Feb. 21, 1990, Ser. No. 482,575
Int. Cl.[5] F16L *29/00*
U.S. Cl. 251—149.6 **20 Claims**



1. A check valve apparatus for use in a fluid passageway cavity which is part of an entrance with a hole having a shouldered wall, said check valve comprising:

a poppet seal,

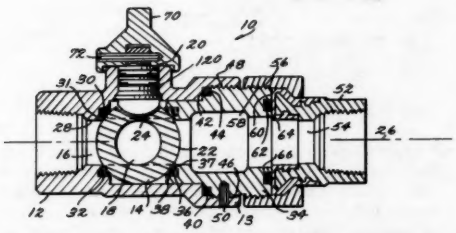
a spring engaging said poppet for biasing said poppet outward towards the hole, and

entrance insertable means for sealing and retaining said poppet within said cavity, wherein said poppet seal, spring, and sealing and retaining means are installed by insertion through said hole.

5,082,246
GAS BALL VALVE

M. Dale Stanley, Stonington; Robert D. Brownlow; John R. Rice, both of Decatur, and Robert E. Sands, Shelbyville, all of Ill., assignors to Mueller Co., Decatur, Ill.

Filed Mar. 12, 1991, Ser. No. 667,300
Int. Cl.[5] F16K 5/06
U.S. Cl. 251—315 46 Claims



1. A valve assembly for carrying a fluid under pressure and comprising a valve housing having a fluid passage therethrough, a valve member rotatably disposed in said passage to be movable between an open position wherein flow through said passage and valve member is permitted and a closed position wherein flow through said passage and valve member is prevented, said valve housing having a bore of a selected diameter and extending along a longitudinal axis, an operating member disposed in said bore with one end thereof operatively engaging said valve member and an opposite end, said bore having an interior portion having a diameter greater than said selected diameter and an annular transition portion extending from said interior portion to said bore of selected diameter with diminishing diameter, said operating member being substantially cylindrical and having a selected length including a first portion having a diameter permitting said first portion to closely interfit with said bore of selected diameter and a second portion comprising an annular convex surface disposed to face said transition portion, said operating member including resilient sealing means for sealingly engaging said bore, said resilient sealing means being located between said opposite end and said second portion of said operating member.

5,082,247
SPLIT SEAT GATE VALVE

Brian S. Owens, Hancock, and Alvin A. Kimpel, Edgerton, both of Wis., assignors to Warman International, Inc., Madison, Wis.

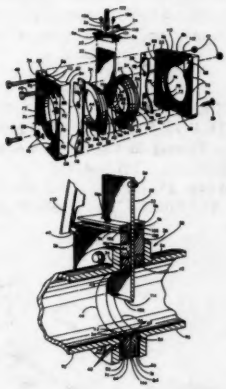
Division of Ser. No. 532,954, Jun. 4, 1990, Pat. No. 5,020,776.
This application May 30, 1991, Ser. No. 708,049
Int. Cl.[5] F16K 3/02
U.S. Cl. 251—326 13 Claims

7. A valve liner for a gate valve assembly with a gate having a straight edge portion; comprising:

a) an elastic annular body having a central through passage, a planar front face and a generally cylindrical outer surface;

b) a flange extending circumferentially around the body;

c) portions in the body defining a planar surface inclined away from the planar front face of the body, such that when a first and second valve liner are placed adjacent one another the inclined planar surfaces will form a linear

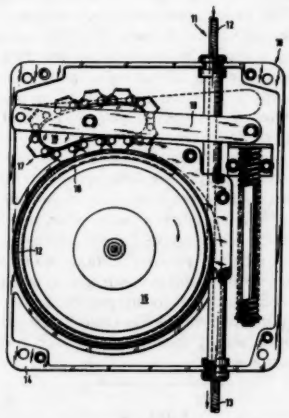


V-shaped groove between the valve liners for receiving the straight edge portion of the blade of a valve gate.

5,082,248
APPARATUS FOR PULLING ON A LINE

Manfred Harig, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Greifzug Hebezeugbau GmbH, Bergisch Gladbach, Fed. Rep. of Germany

Filed Sep. 15, 1989, Ser. No. 408,114
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1988, 3832360
Int. Cl.[5] B66D 1/00
U.S. Cl. 254—333 16 Claims



1. An apparatus for pulling on a line, comprising:

(a) a drive pulley having a periphery and a line groove around said pulley periphery adapted to receive said line;

(b) a pressure application unit mounted adjacent said drive pulley, comprising

(i) a guide unit disposed adjacent said pulley periphery of said drive pulley having a running surface facing said pulley periphery and extending in a curve substantially parallel to said pulley periphery;

(ii) an endless chain mounted on said guide unit adapted to run along said running surface, said chain comprising a plurality of pressure elements and a plurality of rotatable pressure rollers supported on said guide unit run-

ning surface and spaced from said line, each said pressure element carried on at least two of said pressure rollers and adapted to engage said line;

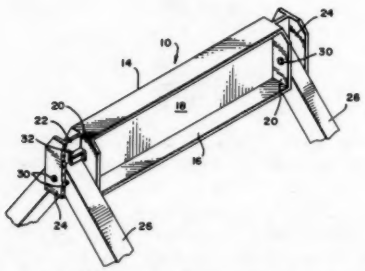
(c) means for urging said pressure application unit toward said pulley periphery such that said line is engaged by said groove and at least one of said pressure elements.

5,082,249

SAFETY LOCKING DEVICE FOR COLLAPSIBLE BARRICADE FOR STREETS AND HIGHWAYS

Paul M. Havlovitz, Escondido, Calif., assignor to Republic Tool & Manufacturing Corp., Carlsbad, Calif.

Filed Sep. 13, 1989, Ser. No. 406,501
Int. Cl.[5] E04H *17/00*; F16M *11/00*
U.S. Cl. 256—64 **3 Claims**



1. A barricade structure for use in a highway or street, comprising

a panel member,

said panel member having a wall support means,

leg member means for supporting respective end portions of said leg member means on said wall support means,

a locking means disposed on said wall support means and having means defining a cavity therein, said locking means having a first locking position for allowing said respective end portions of said leg member to extend into said cavity means and a second release position for freeing said respective end portions of said leg member means,

means pivotally supporting said locking means for movement within a plane perpendicular to a plane of movement of said leg members, and

said locking means being formed from a flexible plastic material and thereby being subject to elastic deformation in said first locking position upon impact with said end portions of said leg member means when said leg member means are forcefully pivoted about said leg member pivotal means, whereby said end portions of said leg member means pans through said cavity means to engage and snap past said locking means to thereby free said end portions of said leg member means from said first locking position without said locking means being moved to said second release position.

5,082,250

DEVICE TO HEAT THE LEADING END OF ALUMINIUM INGOTS TO BE EXTRUDED

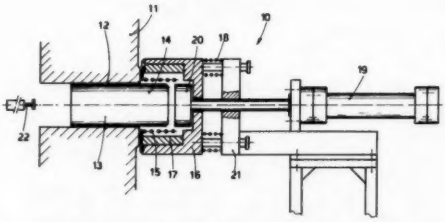
Giancarlo Cristiani, Gorizia, and Danilo D'Odorico, Compoformido, both of Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Jul. 6, 1990, Ser. No. 548,831
Claims priority, application Italy, Jul. 19, 1989, 83459 A/89
Int. Cl.[5] B21C *23/00*
U.S. Cl. 266—44 **7 Claims**

1. An apparatus for heating a leading end of aluminum ingots to be extruded when hot through an extruder die, comprising:

a turret having a plurality of chambers in each of which an aluminum ingot can be provided, said chambers having parallel longitudinal axes, and each of said chambers having a frontal end part; and

a heater for heating a leading end of an aluminum ingot protruding from the frontal end part of a chamber;



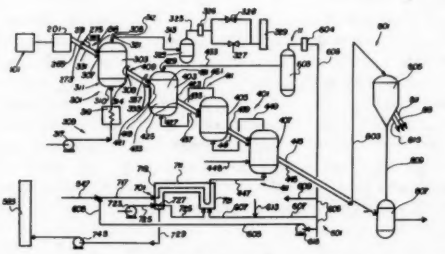
wherein said turret is movable such that each of said chambers can be positioned at at least a first position at which the frontal end part of one chamber cooperates with said heater and a second position at which the frontal end part of said one chamber cooperates with an extruder die.

5,082,251

PLANT AND PROCESS FOR FLUIDIZED BED REDUCTION OF ORE

Roy H. Whipp, Miami, Fla., assignor to Fior De Venezuela, Pto. Ordaz, Venezuela

Filed Mar. 30, 1990, Ser. No. 501,490
Int. Cl.[5] C21B *7/00*
U.S. Cl. 266—142 **8 Claims**



1. A processing plant for reducing finely divided iron oxide material in a circulating fluidized bed, comprising

an ore feed assembly;

a reactor assembly;

reducing gas source means for providing pressurized reducing gas;

said reducing gas source means including reducing gas recycling means;

inert gas source means for supplying a flow of inert gas;

said ore feed assembly including

temporary storage means for temporarily storing incoming iron ore;

ore feed conduit means for transferring dry iron ore from said ore feed assembly to said reactor assembly; said ore feed conduit means including first isolation valve means for maintaining steady flow of fines; and,

pressurizing means for pressurizing said ore feed conduit means;

said reactor assembly including

preheat means for preheating said fines to a pre-determined reaction temperature and removing entrained water from said fines;

said preheat means including preheat ore inlet means and preheat ore outlet means;

said preheat ore inlet means connecting to said ore feed conduit means;

said preheat ore outlet means including cycling slide valve means for maintaining constant solids flow from said preheat means;

multiple ore reactors;

said multiple ore reactors including an uppermost reactor and a lowermost reactor;

each of said multiple ore reactors being located in graduated, decreasing height from said uppermost to said lowermost reactor; and,

reactor conduit means for connecting flow of fines downward and flow of reducing gas upward to and from each of said multiple ore reactors in series relation;

said uppermost reactor including

reducing gas outlet means for permitting flow of reducing gas out of said uppermost reactor and connecting to said reducing gas recycling assembly; and,

ore inlet means for permitting flow of fines into said uppermost reactor and connecting to said preheat ore outlet means;

said lowermost reactor including

reducing gas inlet means for permitting flow of reducing gas into said lowermost reactor and connecting to said reducing gas source means; and,

ore outlet means for permitting flow of fines out of said reactor assembly; said ore outlet means including second isolation valve means for maintaining steady flow of fines;

said ore outlet means and said ore feed conduit means connecting to said inert gas source means to prevent air from being carried with said fines into or out of said multiple ore reactors;

each of said multiple ore reactors including

means for providing an evenly distributed, updraft of reducing gas through downward falling iron ore fines resulting in the development of a fluidized bed of said fines;

means for exhausting reducing gases exiting said fluidized bed; said means for exhausting including at least one pair of primary cyclones; said pair of primary cyclones removing entrained iron ore fines from exiting flue gases; said cyclones including externally actuated valve means for sealing off the cyclones in the event said cyclones become plugged with iron ore fines; and,

means for returning fines from said cyclones to said fluidized bed.

5,082,252

FLUID-FILLED MOUNT

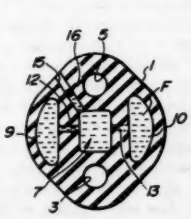
Yasuo Miyamoto, Tochigi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 471,043, Jan. 26, 1990, which is a continuation of Ser. No. 275,471, Nov. 23, 1988, abandoned. This application Jan. 10, 1991, Ser. No. 639,408

Claims priority, application Japan, Nov. 25, 1987, 62-179139

Int. Cl.[5] F16F *13/00*

U.S. Cl. 267—140.1 A **5 Claims**



1. A fluid-filled mount for supporting a vibration member on a structural member comprising:

a body made of a resilient material as a unit and having a first supporting region with a round support hole defined therein for mounting with a structural member on one end and a second supporting region with a round support hole defined therein for mounting a vibration member on the opposite end;

said body having a main fluid chamber defined within a central portion of said body of said resilient material on a longitudinal centerline of said body between said first and second supporting regions, two auxiliary fluid chambers within said body of resilient material, one auxiliary chamber on each side of said main fluid chamber being along a plane perpendicular to the longitudinal centerline between said supporting regions, said auxiliary fluid chambers being disposed so that the distance between said main fluid chamber and each auxiliary fluid chamber is longer than the distance between the outer periphery of each said auxiliary fluid chamber and the outer periphery of said body, and an orifice communicating between said main and auxiliary fluid chambers such that said main and auxiliary fluid chambers are in closed-circuit interaction with each other; and

a fluid filling sealed in said main fluid chamber, said auxiliary fluid chamber, and said orifice.

5,082,253

WIRE HARNESS

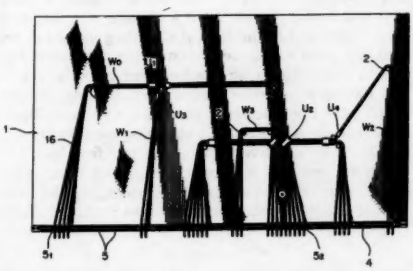
Yoshitsugu Suzuki; Shougo Iizuka; Shigeo Kajiyama; Sanae Suzuki, and Shigeji Kudo, all of c/o Yazaki Parts Co., Ltd. 252, Kawashimada, Gotenba-shi, Shizuoka 412, Japan

Division of Ser. No. 271,970, Nov. 16, 1988. This application Oct. 25, 1989, Ser. No. 426,246

Claims priority, application Japan, Nov. 17, 1987, 62-288353; Nov. 17, 1987, 62-288354; Nov. 17, 1987, 62-288355; Nov. 17, 1987, 62-288356; Nov. 17, 1987, 62-288357

Int. Cl.[5] B21F *3/00*

U.S. Cl. 269—45 **9 Claims**



1. A wire clamp assembly, for use in the production of a wire harness, and adapted to be detachably attached to an edge portion of a wiring board, comprising a plurality of individual wire clamps joined together with each clamp disposed at a predetermined pitch such that projecting end portions of wires clamped therein extend substantially parallel to each other, wherein each of said clamps comprises a base portion and a pair of upwardly and outwardly extending fastening members, and wherein said clamp is adapted to guide an electric wire through said fastening members and to receive such therein.

5,082,254

MICROTOME OBJECT HOLDER ASSEMBLY

Jack E. Hunnell, Durham; John E. Hunnell, Raleigh, and Thomas F. Jackson, Durham, all of N.C., assignors to Triangle Biomedical Sciences, Inc., Durham, N.C.

Filed Sep. 19, 1989, Ser. No. 409,459

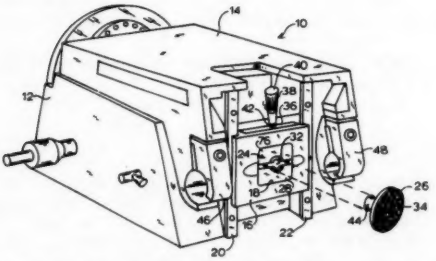
Int. Cl.[5] B25B *1/24*

U.S. Cl. 269—269 **15 Claims**

1. A microtome specimen holder clamping assembly for a

ball-mounted specimen plate, said clamping assembly comprising:

(a) a first clamping member, with main front and back surfaces defining a thickness of said clamping member therebetween, main first and second side surfaces defining a width of said clamping member therebetween, and a top facing surface disposable in proximate facing relationship to a second clamping member, said first clamping member having an upper portion with a generally V-shaped channel therein of thickness coextensive with the thickness of the first clamping member, with an open upper end of the channel at the top facing surface of the clamping member and conical spherical contoured side walls extending convergingly downwardly therefrom to an intersection locus defining a trough extending from said main front surface to said main back surface with an arcuate concave profile therebetween;



(b) a second clamping member with main front and back surfaces defining a thickness of said second clamping member therebetween, main first and second side surfaces defining a width of said second clamping member therebetween, and a bottom facing surface disposable in proximate facing relationship to the top facing surface of the first clamping member, the second clamping member having a lower portion with a channel therein, with an open lower end of the second clamping member channel at said bottom facing surface, wherein the channel in the second clamping member is bounded by an interior surface having a spherical contour and defining arcuate peripheries of the channel at the respective main front and back surfaces of the second clamping member; and

(c) means for selectively engaging the first and second clamping members in proximal clamping relationship to one another, and for selectively disengaging the first and second clamping members from said proximal clamping relationship.

5,082,255

SHEET PROCESSING APPARATUS

Mary-Jo F. Brigante, North Haven; Joseph W. Guiles, Prospect, and James Morabito, Bethel, all of Conn., assignors to Pitney Bowes, Inc., Stamford, Conn.

Filed Dec. 14, 1990, Ser. No. 627,471

Int. Cl.[5] B42C *1/00*

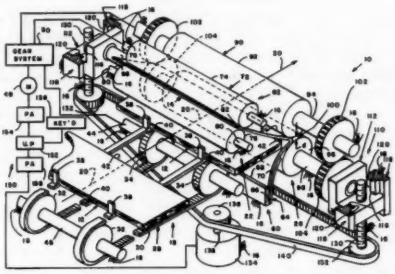
U.S. Cl. 270—45 **38 Claims**

1. Apparatus for processing sheets, comprising:

a. first means for feeding a nestable sheet having a leading edge downstream in a path of travel;

b. means for forming a buckle loop in a foldable sheet, the buckle loop forming means including a stop, the buckle loop forming means including second means for feeding the foldable sheet across the path of travel and against the stop to form a buckle loop therein, the buckle loop forming means including means for guiding the buckle loop downstream of the leading edge of the nestable sheet and in the path of travel thereof; and

c. means for assembling the sheets, the assembling means including third means for feeding the sheets in the path of travel, the third feeding means including an elongate drive roller extending transverse to the path of travel, the third feeding means including an elongate roller extending parallel to the drive roller and defining therebetween an



elongate gap, the assembling means including means for opening and closing the gap, and the means for opening and closing the gap including means for opening the gap for receiving the buckle loop.

5,082,256

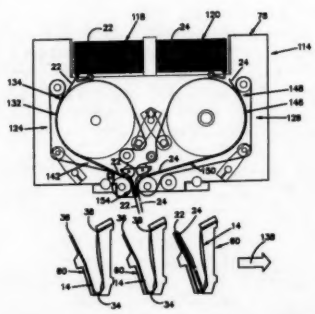
METHOD AND APPARATUS FOR FORMING SHEET MATERIAL ASSEMBLAGES

Robert A. Bryson, Huber Heights, Ohio, assignor to AM International Incorporated, Chicago, Ill.

Filed Dec. 17, 1987, Ser. No. 134,085

Int. Cl.[5] B65H *5/30*

U.S. Cl. 270—55 **8 Claims**



1. An apparatus for use in forming sheet material assemblages having a jacket section enclosing a plurality of inner sections, said apparatus comprising a plurality of feed stations, an array of pockets, means for sequentially moving each pocket in said array of pockets through each of the feed stations, jacket feed means at one of the feed stations for feeding a jacket section into each of said pockets in turn with a major side surface of each jacket section extending transversely to the path of movement of said pockets, a plurality of single inner section feed means each of which is operable to feed inner sections one at a time into a jacket section in each of said pockets in turn with a major side surface of each inner section extending transversely to the path of movement of said pockets, each of said single inner section feed means being disposed at one of said feed stations, and plural inner section feed means disposed at one of said feed stations for feeding a plurality of inner sections at a time into a jacket section in each of said pockets in turn with major side surfaces of the plural inner sections extending transversely to the path of movement of said pockets, said plural inner section feed means including means for holding a first stack of inner sections, means for holding a second stack of inner sections, first transfer means for

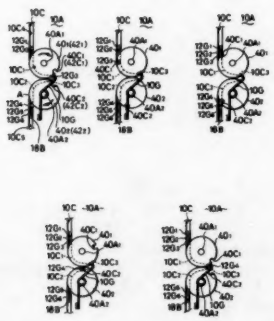
sequentially moving inner sections along a path at least a portion of which slopes downwardly from the first stack of inner sections in a direction opposite to the direction of movement of said pockets through the feed station at which said plural inner section feed means is disposed, and second transfer means for sequentially moving inner sections along a path at least a portion of which slopes downwardly from the second stack of inner sections in the same direction as the direction of movement of said pockets through the feed station at which said plural inner section feed means is disposed, each of the feed stations at which one of said single inner section feed means is disposed and the feed station at which said plural inner section feed means is disposed all having the same extent along a path of movement of said pockets.

5,082,257

SORTER

Akihiro Suzuki, Ibaraki; Hiroshi Yamamoto, Mito, and Hiroshi Tobita, Ohmiya, all of Japan, assignors to Ikegami Tsushinki Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1991, Ser. No. 660,870
Claims priority, application Japan, Jul. 10, 1990, 2-180502
Int. Cl.[5] B65H *39/10*
U.S. Cl. 271—293 **8 Claims**



1. A sorter having a plurality of receptacles each having pins, arranged vertically movably and being capable of receiving articles and discharging means for discharging articles to each said receptacles, comprising:

means for sequentially shifting said receptacles and for holding each receptacle shifted in a predetermined position, said shifting and holding means comprising, a pair of Geneva wheels each having at least one groove formed therein, said Geneva wheels being rotatable with a predetermined difference in phase and said Geneva wheels having outer circumferential surfaces;

means for defining a first portion of a first guide slot to vertically movably align and guide said pins of each receptacle;

means for defining a second portion of said first guide slot continuous to said first portion of said first guide slot, the second portion of said first guide slot being adapted to laterally guide a pin of one of the receptacles for laterally drawing out the one receptacle;

biasing means for biasing the pin of the one receptacle against said outer circumferential surfaces of the Geneva wheels,

a receptacle carrier for retaining said receptacles, the receptacle carrier being vertically movably arranged; and

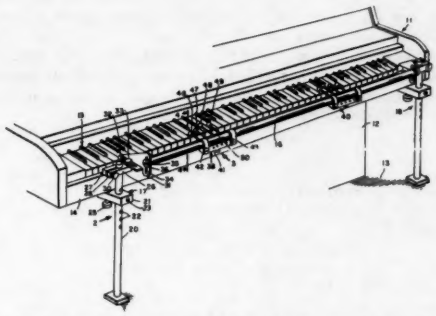
restraining means, provided to said receptacle carrier, for restraining the pins in said first guide slot in contact with adjacent pins.

5,082,258

EXERCISING DEVICE FOR PIANISTS AND THE LIKE

Mikhail Niks, 1434 Fulbright Ave., Redlands, Calif. 92373

Filed Apr. 5, 1991, Ser. No. 680,918
Int. Cl.[5] A63B *5/00*
U.S. Cl. 272—67 **15 Claims**



1. A device for use in exercising only the proper muscles of the fingers and arms of a player of a keyboard instrument, to eliminate wrong and unnecessary movements which cause tension and slow down the aquisition of basic piano techniques, comprising:

a bar,

means for supporting said bar to extend along the length of the keyboard of said instrument and at a height to initially engage the underside of a player's wrist and prevent it from dropping during playing of the instrument;

a finger guide unit on said bar, and

a plurality of finger guide elements carried by said unit for locating respective ones of said player's fingers over different ones of said keys of said keyboard,

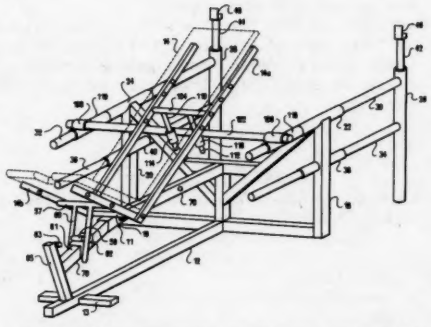
said finger guide elements being effective to guide said player's fingers vertically against said keys.

5,082,259

WEIGHT LIFTING APPARATUS

Karl Gonzalez, 1707 Bragdon, Pueblo, Colo. 81004

Filed Sep. 5, 1990, Ser. No. 577,553
Int. Cl.[5] A63B *21/78*
U.S. Cl. 272—123 **17 Claims**



1. Weight lifting apparatus for assisting a weight lifter in exercising, comprising:

a frame including a pair of spaced, substantially vertical members;

an elongated bench attached to said frame between said vertical members, said bench orientatable in a substantially horizontal position;

a pair of slide supports each disposed at a level above said

bench in said horizontal position, one of said slide supports secured to each of said vertical members;

a pair of substantially parallel, substantially horizontally extending connecting members supported by said slide supports for selective reciprocal sliding adjustment in a substantially horizontal direction;

a pair of substantially vertical weight supports, one of said weight supports attached to each of said connecting members for positioning a weight bar at a plurality of positions over said bench; and

said connecting members each disposed at a level above at least a portion of said bench in a horizontal orientation for preventing a weight bar from contacting and injuring a weight lifter on said bench.

5,082,260

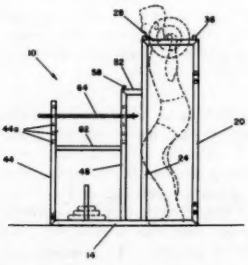
WEIGHT TRAINING APPARATUS

Michael V. Dinelli, 11104 Woodland, NE., Albuquerque, N. Mex. 87112

Filed Jul. 6, 1990, Ser. No. 549,269

Int. Cl.[5] A63B *21/072*

U.S. Cl. 272—123 **15 Claims**



1. A weight training apparatus comprising:

a base having a forward end and a rear end;

a pair of spaced apart rear cross members supported by said base at said rear end of said base, said rear cross members being at a height slightly lower than the approximate average shoulder height and being supported by a pair of left and right rear upright support members and a pair of left and right intermediate rear support members;

a pair of spaced apart intermediate cross members supported by said base at a point forward of said rear cross members, said intermediate cross members being at a height lower than said rear cross members; and

a pair of spaced apart adjustable safety bars supported by said base at a point forward of said intermediate cross members, said safety bars being adjustable in height up to a maximum height that is lower than said intermediate cross members.

5,082,261

BASKETBALL STAND

Keith A. Pelfrey, Wadsworth, Ohio, assignor to The Little Tikes Company, Hudson, Ohio

Filed Nov. 14, 1988, Ser. No. 270,782

Int. Cl.[5] A63B *63/08*

U.S. Cl. 273—1.5 R **10 Claims**

1. A basketball stand assembly, comprising:

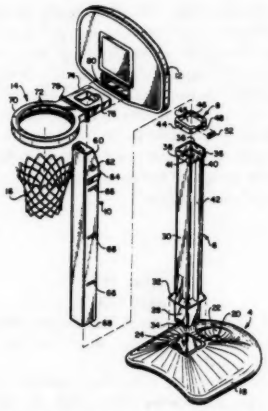
a. a base;

b. a lower post attachable at a lower end to said base and having an axial bore extending downwardly therein from an upper end;

c. an upper post receivable in said lower post bore and extending upwardly therefrom;

d. backboard defining means having a profiled aperture extending therethrough;

e. net suspending means having a projecting member extending through said backboard profiled aperture and affixably receiving an upper end of said upper post therethrough,



whereby fixedly attaching said backboard means and said net suspending means to said upper post.

5,082,262

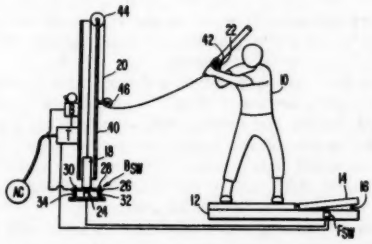
TRAINING DEVICE FOR BASEBALL BATTER AND METHOD THEREFOR

Richard D. Sanchez, 18910 SW. 93rd Ave., Miami, Fla. 33157

Filed Jul. 15, 1991, Ser. No. 729,616

Int. Cl.[5] A63B *69/00*

U.S. Cl. 273—26 R **8 Claims**



1. A training device for a batter swinging a baseball bat comprising:

a forward foot actuated switch means adapted to be actuated by a forward placed foot of said batter during a short foot step of a batter's swing movement;

a wrist movement actuated switch means coupled to a wrist of said batter and adapted to be actuated by a swing motion of said wrist during said batter's swing movement; and,

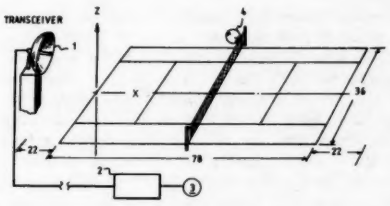
an alarm system coupled to said foot switch means and said wrist switch means, said alarm system having means for issuing an alarm based upon a predetermined sequential movement of said batter's forward foot and said batter's wrist during said batter's swing movement.

5,082,263

METHOD OF AND SYSTEM FOR DETERMINING POSITION OF TENNIS BALL RELATIVE TO TENNIS COURT, AND TENNIS BALL PROVIDED THEREFOR

Richard Berger, 30 Cold Spring Hills Rd., Cold Spring Hills, N.Y. 11743

Filed Nov. 6, 1990, Ser. No. 609,703
Int. Cl.[5] A63B *61/00*
U.S. Cl. 273—29 R 4 Claims



1. A method of determining a position of a tennis ball relative to a tennis court, comprising the steps of:

providing a radar sending and receiving device;

arranging a means for reflecting a radar signal in a tennis ball;

connecting the radar with a computer which stores various positions located upon a tennis court, said positions being designated within a three dimensional spatial relationship defined by X,Y,Z coordinates;

determining the baseline of said court as an X coordinate, the sideline as a Y coordinate and the height above the tennis court as a Z coordinate;

sending by radar said signal to a moving tennis ball during a tennis play and receiving a signal from the tennis ball by the radar;

comparing the received signal by the computer with the stored position of the tennis court so as to determine a position of the tennis ball relative to the tennis court;

locating the tennis ball on said defined X,Y,Z coordinates;

determining whether the ball is located out of bounds as defined by said X,Y,Z coordinates, emitting a perceivable signal indicating said location, stopping said determination when said location of said ball is determined to be out of bounds as defined by said X,Y,Z coordinates, or, redetermining the location of said ball if said ball is determined to be inbounds as defined by said X,Y,Z coordinates until said ball is struck again and redetermining the position of the tennis ball with respect to the X,Y,Z coordinates with each successive strike of said ball from the previously determined position of the tennis ball on the tennis court until said ball is determined to be out of bounds, emitting a second perceivable signal locating said ball and stopping said determination.

5,082,264

GOLF TEE

Katsuji Takeno, 15-47, Nagayoshi Deto 6-chome, Hirano-ku, Osaka-shi, Osaka-fu, Japan

Filed May 21, 1991, Ser. No. 703,673
Int. Cl.[5] A63B *57/00*
U.S. Cl. 273—33 4 Claims

1. A golf tee comprising an elongated shaft having a concaved ball support surface at one end and termmating in a ground penetrating point at its other end, said tee consisting of a material made from a mixture of a clay and a binder wherein said clay is kibushi clay, and said binder includes Na_2O as prinicipal component, and a resin layer, formed by applying a resin hardened by applying ultraviolet rays thereto, which is

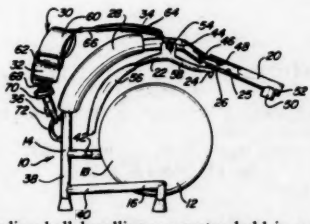
weakened by water such that said resin layer is formed on said mixture which is efflorescent.

5,082,265

GRIP AUGMENTING BOWLING BALL HANDLING APPARATUS

David Bergman, 27319 Aberdeen, Southfield, Mich. 48076

Filed Jul. 3, 1991, Ser. No. 725,274
Int. Cl.[5] A63B *69/00*
U.S. Cl. 273—54 B 16 Claims



1. A bowling ball handling apparatus held in a hand of a bowler for aiding in holding and releasing a bowling ball having a spherical surface comprising:

a frame;

a plurality of spaced bowling ball supports disposed on said frame and engaging a plurality of points on the spherical surface of the bowling ball;

clamp means engaging the spherical surface of the bowling ball at a point spaced from said plurality of points for clamping the bowling ball in said apparatus during pick-up and approach to bowling, said clamping function being maintained by gripping said clamping means in said hand; and

release means for releasing the bowling ball from said clamp means by at least partially releasing the grip of the hand of the bowler to allow delivery of the bowling ball from said bowling ball handling apparatus.

5,082,266

RACKET HEAD WITH INNER PERIPHERAL INDENTATIONS

Kun-Nan Lo, No. 33, Hsiang-Ho Rd., Li-Lin Tsun, Tan-Tsu Hsiang, Taichung Hsien, Taiwan

Filed Aug. 30, 1990, Ser. No. 575,033
Int. Cl.[5] A63B *49/00*
U.S. Cl. 273—73 D 2 Claims

1. A racket frame comprising:

a looped head having an inner periphery, an opposite outer periphery, a plurality of string holes extending from said inner periphery to said outer periphery, and a string web held by said looped head and having longitudinal and transverse string lines passing through said string holes,

said looped head having two frame portions which are symmetrically opposite with respect to a longitudinal axis of the looped frame, said frame portions holding some of said

transverse string lines which pass through a central area of said string web, and

two elongated indentations respectively provided in said frame portions at said inner periphery, said elongated

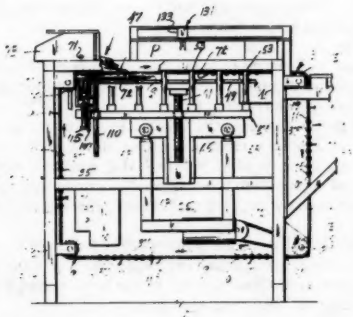
indentations providing an added distance between some of said string holes through which said some of said transverse string lines pass, thereby elongating said some of said transverse string lines.

5,082,267

AUTOMATIC FEEDER FOR WORKPIECES OF LIMP MATERIAL

Charles H. Sanborn, III, Shelbyville, Tenn., assignor to Ark, Inc., Shelbyville, Tenn.

Filed Dec. 4, 1989, Ser. No. 445,539
Int. Cl.[5] B65H *3/00, 5/02*
U.S. Cl. 271—10 **4 Claims**



1. Apparatus for automatically feeding workpieces of limp material one at a time and one after another from a stack thereof to means for operating thereon, said apparatus comprising:

an endless conveyor having a forward-traveling upper reach for conveying said workpieces to said operating means and a lower return reach;

said conveyor having a series of flights spaced at intervals therealong with openings between the flights;

each flight being constructed for carrying a workpiece thereon with the workpiece lying on the flight and having a leading edge at that opening which leads the flight;

said conveyor having a pair of endless chains, each flight comprising a set of rods extending transversely with respect to the conveyor between the chains, the chains having means for removably mounting the rods at the ends of the rods whereby rods may be removed or added for changing the extent of each flight and the extent of each opening lengthwise of the conveyor;

means for driving the conveyor for forward travel of its upper reach;

means under the upper reach of the conveyor and between the upper and lower reaches of the conveyor for holding a stack of said workpieces; and

transfer means for picking up the top workpiece of the stack; separating it from the stack, and bringing it to lie on a flight;

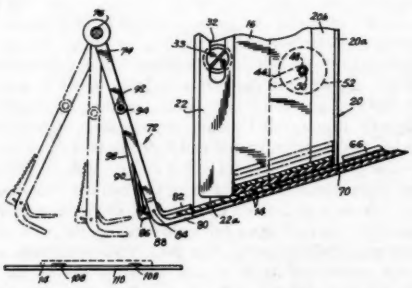
said transfer means comprising pick-up means movable from a retracted position above the upper reach of the conveyor down through an opening in the conveyor into engagement with the top workpiece of the stack, said pick-up means being operable to grasp said top workpiece and then being movable back upwardly through said opening to effect separation of said workpiece from the stack and lifting of said workpiece to a position wherein it extends down in the opening from said pick-up means for engagement of its bottom surface by the leading edge of the oncoming flight to complete the separation of said workpiece from the stack and to bring it to lie generally flat on said oncoming flight, said pick-up means then releasing said workpiece to complete the laying thereof on said oncoming flight.

5,082,268

CREDIT CARD DISPENSING AND POSITIONING APPARATUS

Robert L. Santoro, Copiague, N.Y., assignor to J.A.D. Enterprises of New York, Inc., Farmingdale, N.Y.

Filed Aug. 22, 1988, Ser. No. 234,615
Int. Cl.[5] B65H *5/08*
U.S. Cl. 271—14 **26 Claims**



1. Apparatus for accurately dispensing and positioning a flat member onto a predetermined area of a surface, comprising:

support means for supporting a stack of flat members, each flat member having a leading edge, said support means including a support plate on which said stack of flat members is supported and at least one shuttle pressure bar slidably mounted for substantially vertical movement above said support plate and in front of said stack of flat members so as to limit escape only of the lowermost one of said flat members from said stack, under said at least one shuttle pressure bar;

pusher means for pushing out the leading edge of the lowermost one of said flat members in said stack under said at least one shuttle pressure bar;

gripper means for gripping said leading edge of said pushed out flat member; and

control means for controlling said gripper means to grip said leading edge of said pushed out flat member, to move over said predetermined area of said surface and to then release said gripped flat member so that the latter drops onto said predetermined area of said surface.

5,082,269

PAPER EJECTING DEVICE HAVING SHEET REVERSING AND NON-REVERSING POSITIONS

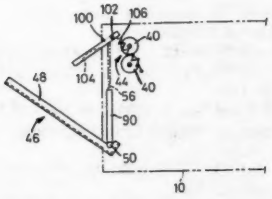
Takanobu Hirayama, Chita; Naohisa Kinoshita, Nagoya; Hiroyuki Kashima, Nagoya; Makoto Hasegawa, Nagoya; Toshihiro Tsuzuki, Kariya, and Kiyoshi Muto, Yokkaichi, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Sep. 10, 1990, Ser. No. 579,967

Claims priority, application Japan, Sep. 13, 1989, 1-237559

Int. Cl.[5] B65H *29/38*

U.S. Cl. 271—65 **14 Claims**



1. A paper ejecting device for ejecting a recording cut sheet out of a recording apparatus, comprising:

ejector means for ejecting said recording cut sheet through an outlet which is provided at a portion of the recording apparatus;

a tray disposed adjacent to said ejector means and comprising a sheet receiving portion for receiving said recording cut sheet which has been ejected through said outlet by said ejector means;

a sheet reversing member disposed above said tray and operable between a first position for guiding and reversing said recording cut sheet ejected through said outlet before the sheet falls onto said sheet receiving portion of said tray, and a second position for permitting said recording cut sheet ejected through said outlet to be received on said sheet receiving portion, without a reversal of said cut sheet, said sheet reversing member having a lower guiding surface; and

a guide portion for supporting said tray selectively at two different levels with respect to said sheet reversing member, said guide portion including guiding means for guiding said tray between said two different levels,

said guide portion supporting said tray such that said sheet receiving portion of the tray placed at a lower one of said two different levels and said sheet reversing member placed in said first position form a first angle on the side of said lower guiding surface of said sheet reversing member, while said sheet receiving portion of the tray placed at a higher one of said two different levels and said sheet reversing member placed in said second position form a second angle on the side of said lower guiding surface, said first angle being larger than said second angle and being determined so that said recording cut sheet is reversed with a leading end portion thereof being guided along said lower guiding surface.

5,082,270

SHEET TRANSPORT DEVICE

Yasushi Kamezaki, Sakai, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Nov. 16, 1989, Ser. No. 438,130

Claims priority, application Japan, Nov. 24, 1988, 63-152793; Nov. 24, 1988, 63-296531

Int. Cl.[5] B65H *3/06, 3/52*

U.S. Cl. 271—109 **13 Claims**

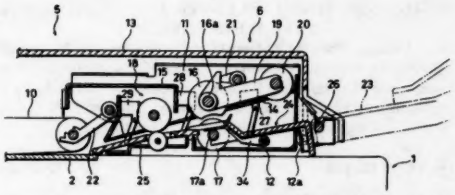
1. A sheet transport device characterized in that the device comprises:

a separating roller drivingly rotatable in a direction opposite to the direction of transport of sheets,

bearings for rotatably supporting the rotary shaft of the separating roller, and

a sheet guide member for guiding the sheet to the separating roller,

the sheet guide member being provided with a fitting portion fittable to each of the bearings from a direction approximately perpendicular to the axis of the bearing and being attachable to the body of an apparatus by fitting the portion to the bearing, the sheet guide member being positioned so as to cover the separating roller from above with the separating roller projected beyond the sheet guide member only by a specified amount.



5,082,271

PROCEDURE FOR THE BREAKING UP OF A STACK FORMED FROM MATERIAL IN SHEET FORM AND DEVICE FOR THE IMPLEMENTATION OF THE PROCEDURE

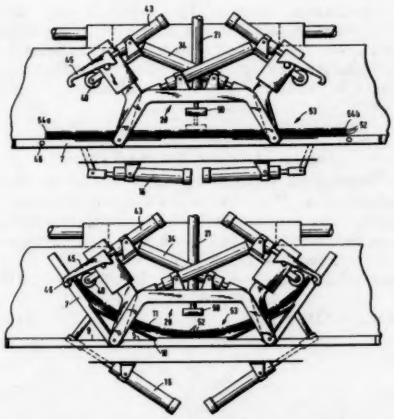
Wolfgang Mohr, Hundshager Weg 42, D-6238 Hofheim/Taunus, Fed. Rep. of Germany

Filed Oct. 3, 1990, Ser. No. 592,238

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1989, 3933625

Int. Cl.[5] B65H *1/00*

U.S. Cl. 271—161 **15 Claims**



8. A device for breaking up a stack of sheet material, which comprises means for supporting said stack in an initial plane, said supporting means including means for bending said stack in a direction outwardly from said initial plane, means for engaging and compressing at least one end of said stack of sheet material after actuation of said means for bending said stack, and means for moving said stack engaging and compressing means in the direction of said means for bending said stack, said stack bending means comprising at least a pair of first and second pivoting table parts located at opposing ends of the table means and first power means for driving and pivoting table parts and said means for engaging and compressing

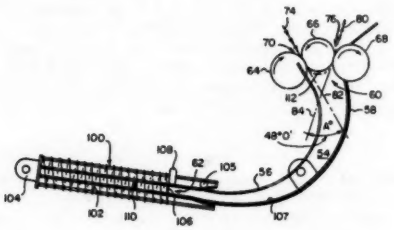
said stack comprises a vertically movable central frame member positioned above said table parts, arm extensions pivotally mounted to said central frame member, pressure elements for exerting force against said stack of sheet material supported by said arm extensions, and second power means for driving said arm extensions.

5,082,272

HIGH-SPEED SHEET INVERTER AND METHOD FOR INVERTING SHEETS

Jean Xydias, Pittsford; Gerald M. Hitchcock, Rochester; Robert D. LeRoy, Rochester; James M. Montgomery, Bergen, and Curtis L. Vernon, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 30, 1990, Ser. No. 620,129
Int. Cl.[5] B65H *29/00*
U.S. Cl. 271—186 **13 Claims**



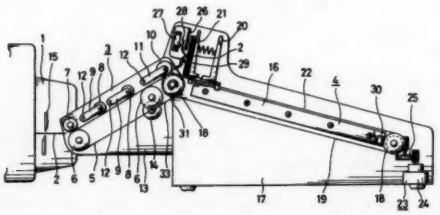
1. A high-speed sheet inverter mechanism for use in sheet handling equipment, the sheet inverter including:
(a) a sheet confinement chamber;
(b) first and second roller assemblies;
(c) a sheet entrance nip formed by said first and second roller assemblies for feeding a sheet into said chamber;
(d) a third roller assembly;
(e) a sheet exit nip formed by said second roller assembly and said third roller assembly for feeding a sheet out of said chamber; and
(f) a simultaneous sheet handling approach angle of about 48° formed by said first and third roller assemblies about said second roller assembly such that a sheet being fed into said chamber contacts a sheet being fed at the same time out of said chamber at said approach angle.

5,082,273

SLIP STORING APPARATUS

Kazuji Matsumoto, Kanagawa; Mitsuo Uchimura, Shizuoka; Tsugio Shiozaki, Shizuoka; Osamu Koizumi, Shizuoka; Ikuzo Sugiura, Kanagawa, and Yoshihiko Sugimoto, Shizuoka, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1990, Ser. No. 545,698
Claims priority, application Japan, Jun. 30, 1989, 1-168753
Int. Cl.[5] B65H *43/04*
U.S. Cl. 271—215 **14 Claims**



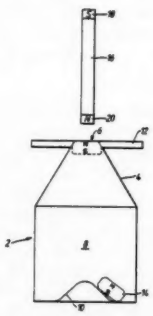
1. An apparatus for conveying and storing slips, said apparatus comprising:
a conveying mechanism and a slip storing unit, said conveying mechanism including a pair of toothed rollers for engaging a trailing edge of said slips to aid in conveying the slips to said slip storing unit;
a movable slip holding member having a slip holding surface for receiving the slips in a stack as they are conveyed to said slip storing unit, said movable slip holding member being fixed to an endless belt which extends around a front pulley and a rear pulley;
wherein said front pulley and said pair of toothed rollers are each rotatably mounted about a common axis.

5,082,274

GAMES AND RANDOM SELECTION APPARATUS THEREFOR

Robert P. Bright, 50 Shepherds Close, Hurley, Maidenhead, Berkshire, United Kingdom

PCT No. PCT/GB89/00612, § 371 Date Dec. 10, 1990, § 102(e) Date Dec. 10, 1990, PCT Pub. No. WO89/12386, PCT Pub. Date Dec. 28, 1989
PCT Filed Jun. 2, 1989, Ser. No. 623,750
Claims priority, application United Kingdom, Jun. 14, 1988, 8814105
Int. Cl.[5] A63F *9/00*; A63B *71/00*
U.S. Cl. 273—138 A **13 Claims**



1. Random selection apparatus comprising a container defining a chamber having a tapering throat, a magnetic member housed within the chamber having at least one pair of axially opposite differently designed faces magnetically polarized as north and south poles, respectively, the taper of the throat being such as to hold the magnetic member captive within the container, an elongate member magnetically polarized by north and south poles at opposite ends and having a cross-section sufficiently small to enter the chamber through the throat, a floor of the chamber being so profiled that when the magnetic member lies on the floor, an upper face of the member does not extend parallel to a mouth of the throat, whereby, when a randomly selected end of the elongate member is inserted into the chamber and then withdrawn, the elongate member will coact with the magnetic member and draw the magnetic member into the throat for lodgement therein so that a randomly selected face of the magnetic member becomes exposed to view.

5,082,275

HIGH-RETURN LOTTERY PROCESS AND SYSTEM

Ole K. Nilssen, Caesar Dr., Barrington, Ill. 60010

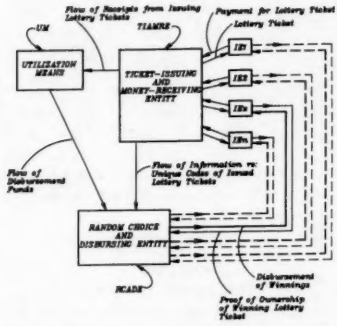
Continuation-in-part of Ser. No. 119,045, Nov. 10, 1987, abandoned. This application May 3, 1991, Ser. No. 695,230
The portion of the term of this patent subsequent to Mar. 5, 2008, has been disclaimed.
Int. Cl.[5] A63B *71/00*; G06F *15/20*
U.S. Cl. 273—138 A **18 Claims**

1. An arrangement comprising:
first means operative to issue at least one lottery ticket to each of a plurality of individual entities; each individual

entity paying a certain relatively small amount of money for each such lottery ticket; each individual entity becoming a holder of at least one lottery ticket; each lottery ticket bearing a unique identification code; each lottery ticket representing to its holder a dollar-equivalent value;

second means functionally connected with the first means and operative to invest, in various financial instruments, at least a substantial portion of the money received by the first means, thereby to receive a flow of financial earnings; the financial earnings varying from time-to-time;

third means functionally connected with the first means and the second means; the third means being operative to: (i) receive a flow of disbursement funds from the second means; (ii) receive and keep record of the unique identification codes of the lottery tickets issued by the first means; (iii) during each one of plural sequential time periods,



randomly choose one of the recorded unique identification codes; (iv) for each such time period, accredit a relatively large amount of funds to the holder of the lottery ticket bearing the unique identification code chosen for that period; (v) inform the various individual entities of the chosen identification code; and (vi) effectively transfer possession of said relatively large amount of funds to the holder of the lottery ticket bearing the chosen identification code;

whereby the dollar-equivalent value of each of the relatively large amounts of funds accredited to the holders of lottery tickets bearing chosen unique identification codes will vary from time-to-time, being —for each given period —substantially proportional to the amount of financial earnings having been received by the second means for that given period.

5,082,276

DISTANCE MEASURING GOLF PUTTING APPARATUS

Douglas W. Stevens, P.O. Box 6575, Stateline, Nev. 89449

Filed Mar. 4, 1991, Ser. No. 664,600

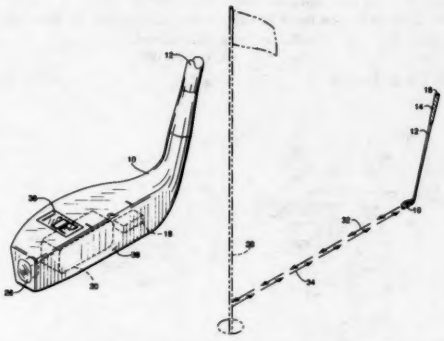
Int. Cl.[5] A63B *69/36*

U.S. Cl. 273—162 F **11 Claims**

1. A distance measuring golf apparatus, comprising:

(a) a shaft, said shaft having a first end and a second end;

(b) a housing, said housing attached to said first end of said shaft, said housing adapted for striking a golf ball;



(c) measuring means for measuring the distance between said housing and a stationary object, said measuring means being contained within said housing; and

(d) activating means for activating said measuring means.

5,082,277

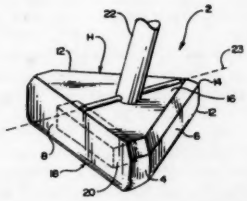
GOLF PUTTER

Allen Gingold, P.O. Box 7451, Rego Park, N.Y. 11374

Filed May 20, 1991, Ser. No. 703,284

Int. Cl.[5] A63B *53/00*

U.S. Cl. 273—164 **10 Claims**



1. A putter for use on a golf course green for striking a golf ball and directing said ball into a golf course hole, comprising:

a polycarborate golf putter head member having a front rectangular portion and an integrally formed rear triangular portion, said front rectangular portion having a generally vertical striking surface, and two side surfaces, said front and rear portions having top faces together constituting one continuous top surface disposed at about a right angle to said striking surface and said portions further having bottom faces together constituting one continuous bottom surface disposed parallel to said continuous top surface, said rear triangular portion further having side faces tapering towards a lateral center point of said putter head member, said head having a "heel to toe" center line which extends across said top surface from the center of and perpendicular to said striking surface and extending rearwardly to a lateral center point;

means for weighting said head such that the overall head weight is generally light while focusing sufficient force at the point of impact between the club and golf ball to be struck;

sighting means for permitting a golfer to properly align said head member with said golf ball;

a shaft having a first end and second end said first end being fixed to the top surface of said head member for allowing the golf putter to be swung; and

gripping means provided at such shaft second end for allowing a user of said putter to grasp said shaft.

5,082,278

GOLF CLUB HEAD WITH VARIABLE CENTER OF GRAVITY

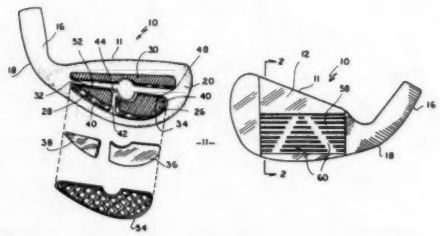
James C. Hsien, 4601 Stillwater Crt., Concord, Calif. 94521

Filed Apr. 12, 1990, Ser. No. 507,775

The portion of the term of this patent subsequent to Nov. 28, 2006, has been disclaimed.

Int. Cl.[5] A63B *53/08*

U.S. Cl. 273—164 **6 Claims**



1. A golf club head comprising:

a substantially vertical hosel adapted for attachment to a shaft;

said head having horizontal top and sole portions extending between a toe portion and heel portion with an inclined front face in a single plane and curved back face;

said back face having a contour of variable radii of curvature from a larger radius at the top horizontal portion of the head to a smaller radius of curvature at the horizontal sole portion of the head;

said back face comprising recesses inset in said back face of larger radius of curvature including one upper long recess and two lower separate shorter recesses with two rims in the same plane and coextensive with and just below the upper recess;

said lower recesses being capable of retaining a plurality of additive mass means and being completely separated by a vertical partition, the bottom thereof being flat and substantially parallel to the contour of the back face;

additive mass means for insertion in said two lower recesses;

a fourth recess comprising said lower recesses and having in the contour of very large radius of curvature a further rim separated from the plane of the rims of said two lower recesses, said rim of said fourth recess being outside the rims of the two lower recesses in countersuck fashion; and

a cover element for insertion in said fourth recess to cover said additive mass while being flush with said contour of said back face with said radius of curvature.

5,082,279

LIQUID FILLED GOLF CLUB

Harold L. Hull, 701 Canyon Way #43, Sparks, Nev. 89434, and Dennis J. Waite, 2245 Hedgewood Dr., Reno, Nev. 89509

Filed Jul. 16, 1990, Ser. No. 552,481

Int. Cl.[5] A63B *53/08, 69/36*

U.S. Cl. 273—170 **12 Claims**

1. A hollow, sealed golf club comprising; an elongated, cylindrical, transparent hollow tube, said tube having filling means, a hand grip, said hand grip having means to attach said hand grip to a proximate end of said tube, a hollow golf club head, said hollow golf club head having means to attach said club head to a distal end of said tube opposite said proximate end, said tube and said golf club head being internally connected and partially filled with a flowable material, said tube having at least two externally controlled valve means, said valve means separating said tube and said head into at least three compartments, said valve means having a first and second position, said first position allowing said flowable material to pass through said valves, said second position not allowing said flowable material to pass through said valves, said transparent tube having indicia to indicate the proportions of said flowable material in each of said compartments; said filling means, said hand grip, said hollow golf club head, said externally controlled valve means, said compartments, said indicia

and said flowable material cooperating together to allow said flowable material to be captured in visible variable proportions in said compartments.

5,082,280

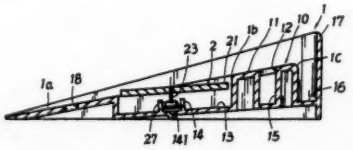
PUTTING PRACTICE DEVICE

Austin Wang, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei, Taiwan

Filed Jun. 10, 1991, Ser. No. 712,698

Int. Cl.[5] A63B *69/36*

U.S. Cl. 273—179 C **3 Claims**



1. A golf putting practice apparatus comprising:

a sloping board having a base portion formed on a central portion of the board having an upper sloping surface tapered frontwardly formed on the base portion, a ball hole recessed in a rear portion of said base portion, and a central recess portion recessed in a central portion of said base portion beyond said ball hole;

a slope-adjusting means formed in said central recess portion in said base portion; and

a surface mat covering said base portion and said slope-adjusting means;

said slope-adjusting means being angularly adjustably mounted on said base portion, so that upon a golfer manually pushing said slope-adjusting means by acting a mat portion corresponding to said slope-adjusting means positioned under said mat, a slope of the mat will be adjusted to simulate a sloping surface of an actual golf course for practice purpose;

said slope-adjusting means including a slope-adjusting member universally mounted on a universal supporting means formed in a central portion of said central recess portion of said base portion;

said universal supporting means including: a biasing stick fixed into a fixing hole formed in a bottom portion of the

slope-adjusting member, a generally spherically shaped block member secured with the biasing stick, a generally spherically shaped socket member defining a hollow portion in said central recess portion and universally coupling the block member therein, a lower plate secured with the socket member, and a tensioning spring resiliently tensioning the block member in the socket member, said universal supporting means fixed in a holder means formed in a central portion of said central recess portion of the base portion; and

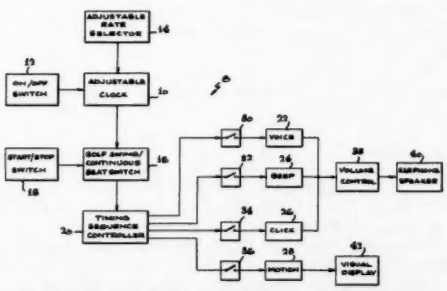
said block member including an enlarged lower portion having a diameter larger than a diameter of an upper socket opening of the socket member to ensure a coupling of the block member with the socket member, and an upper stem formed in the block member for retaining an upper end of a tensioning spring of which a lower end is retained on a lower stem formed on the lower plate.

5,082,281

SPORTS TIMING AID

Charles C. Berghofer, 406 San Antonio Rd., Arcadia, Calif. 91006

Filed Oct. 15, 1990, Ser. No. 597,387
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—183 R **22 Claims**



1. A unitary and portable sports timing aid comprising:

an adjustable clock for producing a series of clock signals at selectable timed intervals;

at least one sound signal generator that is coupled to, controlled by, and operates in response to said clock signals for producing a sequence of sound signals, said sound signal generator including a voice signal generator that produces signals that mimic spoken words; and

an audible sound converter coupled to said sound signal generator for converting said sound signals to audible sounds.

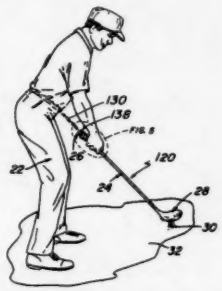
5,082,282

DUAL LIGHT SOURCE GOLF SWING TRAINER

Joseph G. Hernberg, 514 Queen Anne Rd., Cherry Hill, N.J. 08003

Filed Jan. 2, 1991, Ser. No. 636,656
The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186 A **12 Claims**

1. A golf club training device to be used by a person wherein the device comprises a shaft, and a head simulating the appearance of a conventional golf club, said head having a front face, said shaft having a longitudinal axis and being foreshortened so that when said device is swung to simulate the driving of a golf ball, said head is spaced slightly off of the surface upon which said person using said device is standing, said head comprising a hollow body containing self-contained electrical power source means, first light generating means and switch means, and wherein said first light generating means is arranged for projecting a first light beam out of said head, said switch means being connected to said first light generating means and said power source means for causing said first light generating means to produce said first light beam from said electrical power source means, said first light generating means being oriented with respect to said hollow body so that said first light beam is projected out of said head toward said surface and



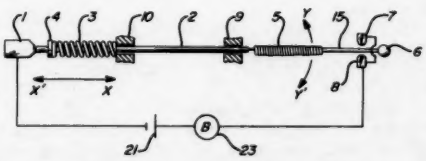
slightly forward of said front surface of said head, whereupon when said person swings said golf club training device, said person can freely see said first light beam projecting in a path across said surface to enable said person to adjust said swing to a desired path, said device additionally comprising second light generating means being arranged for projecting a second light beam in a direction opposite the head.

5,082,283

ELECTROMECHANICAL SWING TRAINER

William P. Conley, 2780 Packard, Ypsilanti, Mich. 48197, and Anthony Foresi, 9717 Manor, Allen Park, Mich. 48101

Filed Jul. 1, 1991, Ser. No. 723,795
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186 A **20 Claims**



1. A swing training device comprising:

an axial force sensor including a first set of electrical contacts, said axial sensor operative to change the state of said first set of contacts when a predetermined axial force is exceeded;

a lateral force sensor including a second set of electrical contacts, said lateral sensor operative to change the state of said second set of contacts when a predetermined lateral force is exceeded;

an electrically actuated signalling device; and

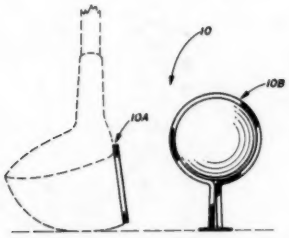
a source of electrical energy disposed in electrical communication with said signalling device, said first set of contacts and said second set of contacts, and means for actuating said signalling device when said predetermined lateral force is exceeded and said predetermined axial force is not exceeded.

5,082,284

GOLF SWING ANALYSIS DEVICE

J. Don Reed, 113 Cougar Ct., Grass Valley, Calif. 95949

Filed Jun. 17, 1991, Ser. No. 715,975
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186 E 17 Claims



1. In combination, (I) a golf club having a club face said club face having a face cover adhered thereto over substantially the entire club face,

said face cover having a front side and a rear side, the front side of which is the hook portion of a contact engageable material, the rear side being adhered to said club face,

and, (II) a pseudo golf ball comprising a low mass foam ball having a strip of the loop portion of a contact engageable material, which material is overlaid over the top and vertically downward around the ball along its great circle, balls,

each end of said strip extending outwardly away from said and an inverted T-shaped member having its upstanding portion interposed between said outwardly extending ends of said strip, and adhered thereto,

whereby upon impact of the golf club with the face cover thereon with the strip of the pseudo golf ball said pseudo ball will become releasingly hookingly engaged to said club's face cover, to retain said ball in position on said face cover.

5,082,285

SOLID GOLF BALL

Akihiko Hamada, Kakogawa, and Hidenori Hiraoka, Kobe, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Oct. 30, 1990, Ser. No. 605,413
Claims priority, application Japan, Nov. 7, 1989, 1-289615
Int. Cl.[5] A63B *37/00*; C08F *8/00*
U.S. Cl. 273—218 8 Claims

1. A solid golf ball of high impact resilience and durability having at least a resilient portion therein formed from a rubber composition which comprises a base rubber, an organic peroxide as a crosslinking agent and an unsaturated carboxylic acid and/or a metal salt thereof as a co-crosslinking agent; said crosslinking agent being present in an amount of 0.5 to 3.0 parts by weight based on 100 parts by weight of said base rubber and said co-crosslinking agent being present in an amount of 15 to 60 parts by weight based on 100 parts by weight of said base rubber, wherein said base rubber comprises a solid polybutadiene prepared by mixing the following components in solution form:

(a) 5 to 50% by weight of an ultra-high molecular weight polybutadiene rubber which has a cis-1,4-bond of at least 80% and a number average molecular weight of 40×10^4 or more, and

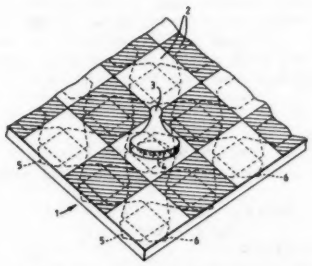
(b) 95 to 50% by weight of a polybutadiene rubber which has a cis-1,4-bond of at least 80%, a number average molecular weight of less than 40×10^4 and a Mooney viscosity (ML_{1+4} 100° C.) of 40 to 70.

5,082,286

SENSORY GAMES

Paul Ryan, Cambridge, England; Eric K. Y. Tse, and Carlo K. L. Lo, both of Hong Kong, Hong Kong, assignors to Saitek Limited, Kowloon, Hong Kong

Filed Sep. 6, 1990, Ser. No. 578,833
Claims priority, application United Kingdom, Sep. 7, 1989, 8920204
Int. Cl.[5] A63F *3/02*
U.S. Cl. 273—238 10 Claims



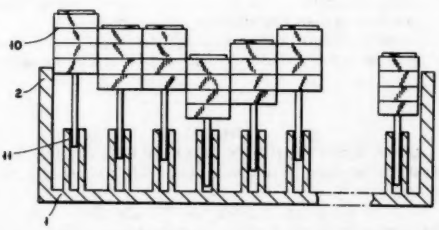
1. An electronic game apparatus comprising; a board having discrete playing areas, a plurality of playing pieces, a plurality of transmit and receive coils arranged beneath the board, the playing pieces having an element, a supply means for supplying a current to the transmit coils to induce a voltage in the receive coils, and a comparison means for comparing the voltage with a reference voltage.

5,082,287

APPARATUS FOR A GAME

Dozie C. B. Nwanna, c/o David Garrick & Co., Investment House, 21-25 Broad Street, Lagos, Nigeria

Continuation of Ser. No. 232,447, Aug. 15, 1988, abandoned, which is a continuation-in-part of Ser. No. 930,801, Nov. 14, 1986, abandoned. This application Jul. 30, 1990, Ser. No. 561,260
Claims priority, application Nigeria, Nov. 22, 1985, 9398/85
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—241 8 Claims



1. An apparatus for playing a game comprising a base and a plurality of platforms divided into subsets of different colors, said platforms being adapted to be placed over said base, and each one of said plurality of platforms having means for slidably connecting the platform to said base, the distance between the bottom surface of each said platform and said base being independently subject to selective setting at any said distance from said base within a predetermined range of distances, said means for slidably connecting each of said platforms to said base including an elongated projection from one of said base and said platform, and a corresponding elongated recess in the other of said platform and base engageable with said projection, said projection and said recess being sized and positioned such that the extent of engagement of said projection in said

recess is variable to provide telescopic engagement therebetween, said range of distances being determined by the length of said projection that is received in said recess, structures of varying distances from said base being subject to assembly using said platforms,

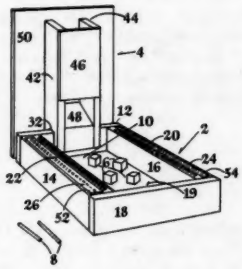
and a set of playing pieces adapted to rest on said platforms.

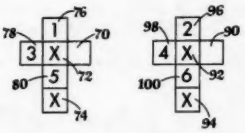
5,082,288

DICE GAME SIMULATING HORSESHOE PITCHING

Elmer L. Swartz, 9490 Harbor Greens Way, #C-203, Seminole, Fla. 34646

Filed Jun. 4, 1991, Ser. No. 710,511
Int. Cl.[5] A63F *3/00, 9/04*
U.S. Cl. 273—244 **5 Claims**





1. Apparatus for a dice game comprising

polyhedral dice having indicia on facets thereof,

a horizontal surface bounded by vertical walls,

a row of holes on the top surface of one of said vertical walls,

a vertical dice chute attached to a plane surface member, said vertical dice chute and plane surface member being detachably mounted on a second one of said vertical walls adjacent said horizontal surface,

wherein said apparatus has dimensions such that said vertical dice chute and plane surface member, when detached from said second one of said vertical walls and placed horizontally on top of said horizontal surface and said vertical walls, with said dice chute below said plane surface member, said apparatus forms a box having an intramural space therein adequate for the storage of said dice.

5,082,289

REBOUND GAME GARMENT

Steve A. Paranto, 2375 SW. Augusta Pl., Aloha, Oreg. 97006, and Arlen C. Paranto, Box 304, Eatonville, Wash. 98328

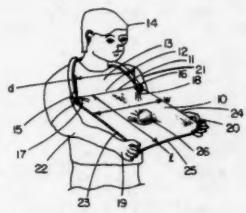
Filed Nov. 5, 1990, Ser. No. 608,711
Int. Cl.[5] A63B *67/00;* A41D *13/04*
U.S. Cl. 273—318 **1 Claim**

1. A garment for use by a user having a chest, a back, first and second armpits and first and second shoulders, said garment comprising, in combination, a sheet of material being four sided and having a first end and a second end, a first side and a second side and means for attaching said first end of said sheet of material to said user across said chest midway between said armpits, said first side joining said first end to form a first corner, said second side joining said first end to form a second corner, said means for attaching comprising:

a first strap having first and second ends and a midpoint, said first end being adjustably attached at said second corner,

a second strap having third and fourth ends, said third end being adjustably attached to said first corner, said fourth end being attached to said first strap at said midpoint and

a third strap having fifth and sixth ends, said fifth end being adjustably attached to said second corner, said sixth end



being attached to said first strap at said midpoint, said second and third straps being positioned to hold said first strap in said armpits,

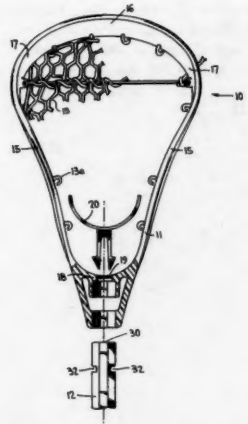
whereby said garment is donned by said user by placing said first strap under said first armpit across said back and under said second armpit and placing said second strap over said first shoulder and said third strap over said second shoulder.

5,082,290

LACROSSE STICK

Richard B. Tucker, Baltimore; Jackie L. Davis, Aberdeen, and Fielding H. Lewis, Jr., Queenstown, all of Md., assignors to STX, Inc., Baltimore, Md.

Continuation-in-part of Ser. No. 550,562, Jul. 10, 1990, Pat. No. 5,007,652, which is a continuation-in-part of Ser. No. 414,258, Sep. 29, 1989, Pat. No. 4,940,243. This application Jan. 29, 1991, Ser. No. 647,058
Int. Cl.[5] A63B *59/02*
U.S. Cl. 273—326 **3 Claims**



1. A head for a lacrosse stick comprising a generally V-shaped frame adapted to receive a web, said frame being defined by two side walls joined at a juncture and diverging therefrom, a transverse wall joining the ends of said side walls opposite of said juncture, means for securement of a web onto said frame and stop means, said juncture having an opening therein and said stop means comprising a base and at least one leg integral with and extending from said base removably fitted

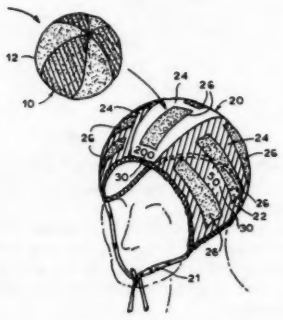
into said opening in said juncture with said base fitting substantially flush with said juncture.

5,082,291

PROJECTILE AND TARGET GAME APPARATUS

Mel Appel, Livingston, N.J., and Denni Rivette, Akron, Ohio, assignors to Mel Appel Ltd., Kowloon, Hong Kong

Filed Jun. 27, 1991, Ser. No. 721,327
Int. Cl.[5] A63B *67/00*
U.S. Cl. 273—346 **11 Claims**



1. Apparatus for a projectile-target game, comprising:

(A) a projectile which is soft, lightweight and resilient and has an outer surface consisting essentially of a felt-like material suitable for releasably bonding with a hook-like material; and

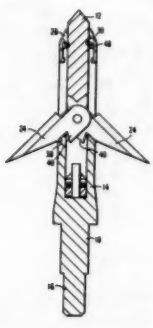
(B) a cap configured and dimensioned to be releasably worn on and about the head of a player of the game, said cap when worn having an exposed outer surface defining at least one target area including at least one region of a hook-like material suitable for releasably bonding with said felt-like material of said projectile.

5,082,292

BROADHEAD WITH DEPLOYABLE CUTTING BLADES

Riley Puckett, Lorton, and Wayne Bell, Annandale, both of Va., assignors to Pucketts Bloodtrailer Broadhead, Lorton, Va.

Continuation-in-part of Ser. No. 460,299, Jan. 3, 1990, Pat. No. 4,998,738. This application Jan. 3, 1991, Ser. No. 637,491
Int. Cl.[5] F42B *6/08*
U.S. Cl. 273—421 **3 Claims**



2. A broadhead, comprising:

a body attachable to an arrow shaft, said body being immovable relative to an arrow shaft once said body is attached to an arrow shaft;

a plunger slidable in a bore in said body having a pointed end which projects out of said body from said bore in said body, said plunger being slidable between a first position and a second position relative to said body wherein said pointed end of said plunger is furthest from said body when said plunger is in said first position and wherein said pointed end of said plunger is closest to said body when said plunger is in said second position;

a cutting blade mounted on a pivot pin connected to said plunger, said cutting blade having a pivoting end which pivots on said pivot pin and an opening end which opens away from said body;

a means for holding said cutting blade in a retracted position wherein said pivoting end of said cutting blade is closer to said pointed end of said plunger than said opening end of said cutting blade and wherein said opening end of said cutting blade is held at a first point close to said body; and

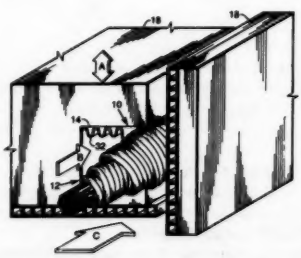
a cam surface on said body positioned to open said opening end of said cutting blade to a second point away from said body as said plunger moves from said first position to said second position, said cutting blade being pivotable from said second point away from said body to a third point to form a non-barbed configuration of said cutting blade and said body when said plunger is in said second position.

5,082,293

HIGH TEMPERATURE, FLEXIBLE, FIBER-PREFORM SEAL

Bruce M. Steinetz, Broadview Hts., and Paul J. Strocky, Middleburg Hts., both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 9, 1990, Ser. No. 610,879
Int. Cl.[5] F16J *15/46*; B64D *33/04*
U.S. Cl. 277—3 **18 Claims**



1. Apparatus for sealing a gap between a movable panel and an adjacent sidewall spaced therefrom to inhibit leakage of gases from a high pressure side to a low pressure side, said apparatus comprising

multiple layers of fiber in said gap forming a fiber-preform seal including a uniaxial core with helical fibers wound over the same, and

means for applying a pressure toward said sidewall to a portion of said helical fibers to form a seal between said sidewall and another portion of said helical fibers.

5,082,294

HEAT CONDUCTING WEAR SLEEVE ASSEMBLY FOR LUBRICANT SEALS

David M. Toth, Brighton, and William H. Riggs, Saline, both of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

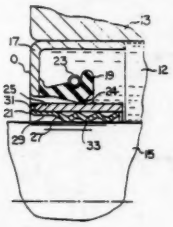
Filed Sep. 20, 1990, Ser. No. 585,321
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—37 **4 Claims**

1. A wear sleeve assembly installable on a shaft for providing a seal contact surface, said wear sleeve assembly comprising:

an outer metallic wear sleeve formed of a wear-resistant

material that is thermally conductive, said sleeve having a smooth outer surface and an inner surface which defines a radial gap around said shaft; and

a radially resilient liner extending within said sleeve, said liner having an outer surface press-fit against the inner surface of said sleeve and an inner surface having a radially inwardly extending portion adapted to have pressure engagement against said shaft; said liner being formed of a thermally conductive deformable sheet metal material; said liner having an unstressed radial extent that is slightly



greater than the radial gap between the wear sleeve and the shaft, so that when the wear sleeve assembly is installed on the shaft, the liner will be radially squeezed between the sleeve and the shaft so as to be in a radially stressed resilient condition; said liner defining a first void space between said inner surface of said wear sleeve and said outer surface of said liner at a position adjacent to and radially outward of said radially inwardly extending portion of said liner, and said liner defining a second void space between said liner surface of said liner and said shaft at a position axially spaced from said first void space.

5,082,295

PISTON OR ROD SEAL

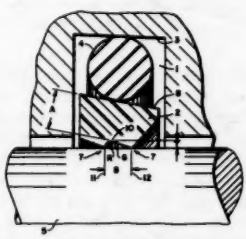
Michael Wetzel, Burstadt, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim/Bergstr., Fed. Rep. of Germany

Filed Nov. 28, 1990, Ser. No. 619,142

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1989, 3940005

Int. Cl.[5] F16J *15/24*

U.S. Cl. 277—165 **5 Claims**



1. In a cylindrical seal, comprising an annular scraper ring which is made of a PTFE material and is supported in a first cylindrical groove radially open toward a cylindrical surface of a relatively moving cylindrical machine part, the scraper ring being pressed against the relatively moving machine part by means of an O-ring made of an elastomeric material and supported on the bottom of the first groove, wherein the scraper ring, on the side facing the relatively moving machine part, has at least two sealing edges defining respective radial planes and being separated by a second groove with a radial depth T and wherein, on the side facing the O-ring, the scraper ring has a conical surface with an external diameter which increases axially in a direction toward the side facing away from pressure to be sealed, the improvement wherein the second groove has a rounded bottom with a radius R which is approximately equal to the radial depth T of the second groove and wherein the conical surface is a continuous surface that overlaps at least the radial planes of the sealing edges.

5,082,296

SPIRAL WOUND GASKET AND FABRICATION METHOD THEREOF

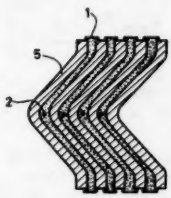
Junichi Aizawa; Yasushi Omata, both of Hitachi; Tatsuo Shimoyama, Higashimurayama, and Kakuichi Kodama, Hino, all of Japan, assignors to extra-ministerial bureau of Ministry of International Trade and Industry, Japan Agency for Industrial Science and Technology, Tokyo, Japan

Filed Feb. 27, 1990, Ser. No. 485,427

Claims priority, application Japan, Apr. 7, 1989, 1-87031

Int. Cl.[5] F16J *15/12;* **B21D** *39/00*

U.S. Cl. 277—204 **4 Claims**



1. A spiral wound gasket formed by winding combinedly and spirally a metal strip having at least one bend in its lateral direction and a belt-shaped filler in such a way that said metal strip and said filler are laminated together along their longitudinal direction and said filler protrudes from both lateral edges of said metal strip, said filler being a flexible tape of carbon/-carbon composites having a structure in which a carbon fiber in the form of a bundle or a string is contained in the interior of an expanded graphite tape and said carbon fiber is located at and extends longitudinally along the bend in said flexible tape formed when the laminate of said flexible tape and said metal strip is wound.

5,082,297

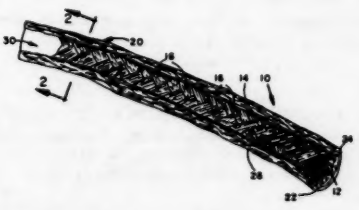
GASKET AND GASKETED JOINT

Gary L. Flasher, Spring City, Pa., assignor to Davlyn Manufacturing, Spring City, Pa.

Filed Dec. 18, 1990, Ser. No. 629,533

Int. Cl.[5] F16J *15/16*

U.S. Cl. 277—230 **10 Claims**



1. A gasket comprising:

a length of rope having a circumferential outer surface, the rope being formed at least substantially by a plurality of interwoven fibrous yarns; and

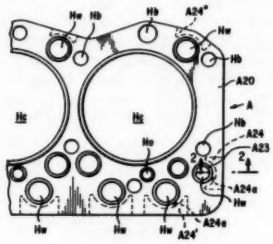
an elastomeric coating adhered to the circumferential outer surface of the rope along the length of the rope, the coating being applied to more than one-half and less than all of the circumferential outer surface of the rope so as to expose part of the circumferential outer surface only along a single side of the rope.

5,082,298

STEEL LAMINATE GASKET WITH SEAL PROTECTING MEMBER

Tatsuro Uchida, and Yoshio Yamada, both of Tokyo, Japan, assignors to Ishikawa Gasket Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1989, Ser. No. 302,535
Claims priority, application Japan, Feb. 1, 1988, 63-12261[U]; Feb. 19, 1988, 63-20827[U]; Apr. 20, 1988, 63-53125[U]
Int. Cl.[5] F16J *15/08*
U.S. Cl. 277—235 B **19 Claims**



1. A steel laminate gasket for an internal combustion engine having at least one hole to be sealed and an outer peripheral portion, comprising,

first and second plates for constituting the steel laminate gasket, each said plate having a hole corresponding to the hole of the engine and an outer periphery to define the outer peripheral portion of the gasket,

sealing means formed around the holes of the first and second plates for sealing therearound when the gasket is tightened, and

at least one seal protecting member situated on a part of the outer peripheral portion of the gasket, said seal protecting member being arranged adjacent to and at a predetermined distance away from the sealing means to substantially surround the sealing means at a side facing the outer peripheral portion of the gasket, said seal protecting member being non-continuous around the outer peripheral portion of the gasket, said seal protecting member including an inner portion facing the sealing means, said inner portion having a contour to partly surround the sealing means, a thickness of the gasket on the seal protecting member, when the gasket is tightened, being thicker than a thickness on a portion of the gasket between the sealing means and the seal protecting member so that said seal protecting member when the gasket is tightened, receives a part of the tightening pressure applied to the sealing means to thereby securely seal around the holes of the first and second plates by the sealing means and to prevent creep relaxation of the sealing means due to vibration of the gasket when the engine is operated.

5,082,299

ADJUSTABLE ROTATIONAL COUPLER

James C. Beattie, 6747 Whitestone Rd., Baltimore, Md. 21207

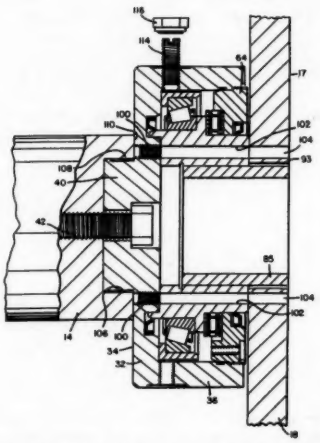
Filed Nov. 9, 1990, Ser. No. 611,261
Int. Cl.[5] B23B *31/36;* **F16C** *23/06*
U.S. Cl. 279—1 L **65 Claims**

1. An adjustable rotational coupler comprising:

a housing having an interior bore concentric with a central axis of the housing, the housing mountable to a mounting member;

means for adjusting the housing with respect to the mounting member such that an attitude of a plane perpendicular to the central axis of the housing is adjustable with respect to an attitude of a plane perpendicular to a central axis of the mounting member;

a rotatable inner race adjustably disposed in the interior bore of the housing such that a face plate is mountable to the inner race; and



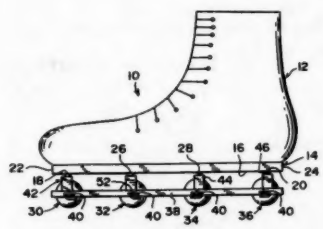
means for adjusting the inner race with respect to the housing such that a central axis of the inner race is transversely adjustable with respect to the central axis of the housing.

5,082,300

ROLLER SKATE

Albert J. Cucurullo, 8 Ash Rd., Briarcliff Manor, N.Y. 10510

Filed Feb. 6, 1991, Ser. No. 651,537
Int. Cl.[5] A63C *17/06*
U.S. Cl. 280—11.22 **3 Claims**



1. An improved roller skate of the type having a boot and a sole plate, wherein the improvement comprises:

a) a sole plate having on its underside a pair of swivel holes, in which said first swivel hole is located at the forward end and said second swivel hole is located at the rearward end of the sole plate and a pair of transverse slide openings equally spaced apart between said swivel holes;

b) four casters in which said first caster is carried facing rearwardly in said first swivel hole, said second caster is carried facing rearwardly in said first slide opening, said third caster is carried facing forwardly in said second slide opening and said fourth caster is carried facing forwardly in said second swivel hole; and

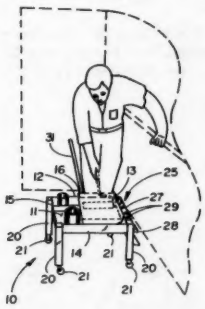
c) a pair of tension bars, each having four spaced apart longitudinal slots slideably engageable with said casters and are linked together in a single file relationship with said tension bars in a parallel position between said casters so that when a skater wants to turn, the boot can be tilted to one side, pushing said casters so as to turn away from the side of the tile, causing said tension bars to flex and curve outwards thus allowing said skate to turn.

5,082,301

MOBILE WORK STATION FOR PAINTER

Kevin H. Schumacher, 317 Bustleton Ave., Apt. C, Feasterville, Pa. 19053; Robert J. Martin, and Edward L. Martin, both of Hampstead, Md., assignors to Kevin H. Schumacher, Feasterville, Pa.

Continuation of Ser. No. 371,032, Jun. 26, 1989, Pat. No. 4,993,726. This application Oct. 22, 1990, Ser. No. 601,226
Int. Cl.[5] B62B *3/00*
U.S. Cl. 280—38 2 Claims



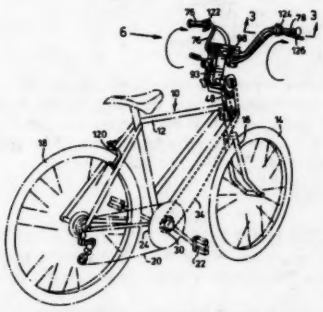
1. A method of painting on work surfaces, wherein a painter on a job site uses a roller paint applicator and a paint pan or the like, the paint pan having a shallow end and a deep end, the method comprising the steps of: providing a collapsible, portable, relatively light weight mobile work station which may be carried to the job site, the mobile work station having a length and including an open recessed tray having a front wall adjacent to where the painter normally stands and further having a back wall, the front and back walls being transverse to the length of the mobile work station, the tray having a divider wall running along the length of the mobile work station between the front wall and the back wall of the tray thereof, thereby dividing the tray into at least a first large compartment running along the length of the mobile work station, the mobile work station further including a plurality of pivotable legs, such that the legs have a first storage position adjacent to the tray in the collapsed position of the mobile work station, and such that the legs have a second extended position in which the legs depend downwardly to support the tray at a convenient height above the floor so that the painter may apply paint to the paint applicator without repeatedly deep bending, thereby reducing painter fatigue; carrying the mobile work station to the job site, pivoting the legs from the first storage position to the second extended position and securing the legs in the extended position such that the mobile work station is in an erected position, the legs of the mobile work station having wheeled means associated therewith for ease of movement of the mobile work station at the job site; providing a rigid handle attached to the mobile work station such that the painter may grasp the handle for pushing or pulling the mobile work station around the job site; disposing the paint pan in the compartment in the mobile work station such that the shallow end of the paint pan is adjacent to the handle and the deep end of the paint pan is away from the handle; providing paint and pouring the paint into the paint pan; dipping the paint applicator into the paint in the deep end of the paint pan, removing excess paint at the shallow end of the paint pan and applying paint to the work surfaces; repeating the dipping of the paint applicator into the paint and applying the paint to the work surface; completing the application of paint to the work surface; pushing or pulling the handle to move the mobile work station to the next work surface such that spilling of paint is prevented and without requiring the lifting of the paint pan by the painter; repeating the dipping of the paint applicator into the paint, applying paint to the work surface and moving the mobile work station by pushing or pulling the handle and without requiring unnecessary movement by the painter around the job site or around the mobile work station, thereby enhancing the speed, quality and efficiency of the work being performed by the painter while simultaneously reducing painter fatigue on the job.

5,082,302

HAND CRANK BICYCLE DRIVE

Ernesto M. Nacar, 5 Hedley Court, Brampton, Ontario, Canada L6S 2B6

Continuation of Ser. No. 453,957, Dec. 20, 1989, abandoned. This application Apr. 15, 1991, Ser. No. 685,967
Claims priority, application Canada, Jul. 26, 1989, 606713
Int. Cl.[5] B62M *1/12*
U.S. Cl. 280—234 22 Claims



15. In a velocipede having a frame, a steerable front wheel, means for rotatably mounting said front wheel on said frame for purpose of steering, said mounting means including a steering post, and a driven rear wheel, hand-powered drive means for said rear wheel, said drive means including a rotatable drive sprocket operatively connected to shaft means rotatably mounted on said frame, a rotatable driven sprocket operatively connected to said rear wheel in order to rotate same, a continuous drive chain extending about said drive and driven sprockets, means for rotating said shaft means, said rotating means including a hand-crank, wherein said shaft means comprises first and second shaft sections connected by a universal joint to permit said shaft means to bend as the velocipede is steered, said universal joint being located directly above and in substantial axial alignment with said steering post at the front of said frame.

5,082,303

CHANGEABLE DROPOUT ASSEMBLY

William K. Duehring, Huntington Beach, Calif., and Forrest D. Yelverton, Longmont, Colo., assignors to GT Bicycles, Inc. a Calif. Corporation, Huntington Beach, Calif.

Filed Sep. 6, 1990, Ser. No. 579,361
Int. Cl.[5] B62K *19/18*
U.S. Cl. 280—288 8 Claims

1. A vertical dropout assembly for attachment to a bicycle frame comprising:

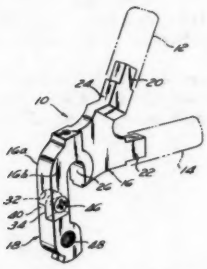
a vertical dropout member, said vertical dropout member defining an elongate, vertically oriented slot therein for receiving an axle of a bicycle wheel;

a hanger member adapted to receive a rear derailleur of a bicycle;

means for connecting said hanger member to said dropout member; and

means for frictionally attaching said dropout member to a seat stay and chair stay of said bicycle frame, said attaching means comprising a first tab member formed on said dropout member sized and configured to be frictionally received and secured within said seat stay and a second tab member formed on said dropout member sized and configured to be frictionally received and secured within

said chain stay, said first tab member being formed on said dropout member in a manner so as to be laterally offset from said second tab member such that the distance separating said first tab member and said wheel is greater than



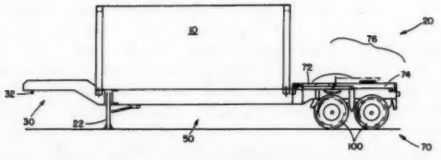
the distance separating said second tab member and said wheel when said dropout assembly is attached to said bicycle frame, said first and second tab members being adapted to allow said dropout member to be quickly and easily removed from said bicycle frame.

5,082,304

TWENTY FOOT CONTAINER TRANSPORTER

Robert E. Preller, Mt. Holly, N.J., and Donald L. Miedama, Morrisville, Pa., assignors to Sea-Land Service, Inc., Edison, N.Y.

Filed Jun. 5, 1990, Ser. No. 533,681
Int. Cl.[5] B60P *1/00*
U.S. Cl. 280—407.1 **31 Claims**



1. An intermodal container transporting trailer comprising:

(a) a forward portion extending from the front of the trailer rearward, the forward portion having a hitch means for hitching the trailer to a tractor having a fifth wheel, the forward portion adapted to clear the fifth wheel of the tractor when the trailer is hitched to the tractor, the forward portion turning downward at the end opposite the front of the trailer;

(b) a main portion connected to the end of the downturned end of the forward portion, the main portion extending rearward from the forward portion, the main portion having an upper surface plane, the main portion including means for receiving and supporting an intermodal container above the upper surface plane, the main portion being lower than the forward portion;

(c) a rear portion connected to the end of the main portion opposite the forward portion, the rear portion extending rearwardly from the main portion and ending at the end of the trailer, the rear portion having fixtures for receiving a trailer bogie;

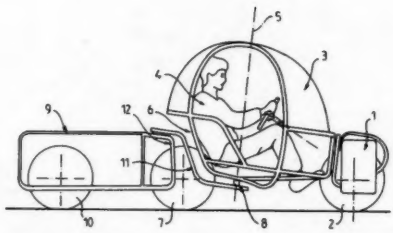
(d) the rear portion having an upper surface, the upper surface of the rear portion lying in a plane parallel to and above the upper surface plane of the main portion, a segment of the rear portion adjacent the main portion being movable between a first position, in which said segment and the remaining part of the rear portion define a substantially coextensive and substantially continuous planar upper surface of the rear portion to enable cargo to be moved thereover while loading and unloading an intermodal container, and a second position, and also to facilitate reception of a container by the main portion, with said remaining part of the rear portion being non-movable.

5,082,305

URBAN MOTOR VEHICLE FOR TOWING A DELIVERY TRAILER

Louis Le Bihan, and Antoine Fritsch, both of Paris, France, assignors to Louis Le Bihan, Paris, France

PCT No. PCT/FR89/00487, § 371 Date May 18, 1990, § 102(e) Date May 18, 1990, PCT Pub. No. WO90/03299, PCT Pub. Date Apr. 5, 1990
PCT Filed Sep. 25, 1989, Ser. No. 460,341
Claims priority, application France, Sep. 23, 1988, 88 12428
Int. Cl.[5] B60D *1/00*
U.S. Cl. 280—504 **15 Claims**



4. An urban delivery system, having an autonomous front towing unit, including:

a central part forming a driver-passenger cockpit;

a forwardly located drive unit and two front drive wheels;

said driver cockpit having a shape substantially spherical, about a substantially vertical axis located at the center of gravity of the towing unit;

the rear portion of said driver cockpit being specifically concepted so as to provide an exterior housing having an accessible space;

said exterior housing space including a housing for a rear wheel assembly of said towing unit, said rear wheel assembly being centrally located and coplanar with the vertical front and rear symmetry of the vehicle, and an articulated attachment point located close to said substantially vertical axis of said cockpit; and

an autonomous wheeled rear towed unit having a drawbar for attachment to said articulated attachment point of the towing unit;

said towed unit incorporating a storage and transportation compartment of said system;

said urban delivery system, by virtue of the location of said attachment point forwardly and substantially at said vertical axis of the towing unit, thereby permitting construction of said towing unit with a uniquely minimum length; and

said forward location of said attachment point and said exterior space, allowing uninhibited lateral movement of said drawbar at the rear of said driver cockpit, whereby said system may be operated within a uniquely small turning radius.

5,082,306

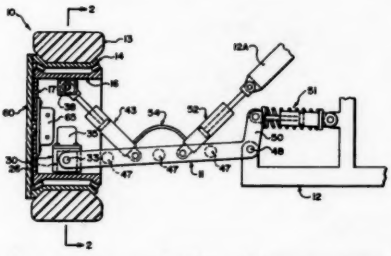
VEHICLE SUSPENSION SYSTEM PROVIDING CONTINUOUS VERTICAL ORIENTATION OF THE GROUND WHEEL

Boris Khavkin, 5 Beeston Drive, Winnipeg, Manitoba, Canada R2V 3E9

Filed Sep. 21, 1990, Ser. No. 586,211
Int. Cl.[5] B62D *17/00*
U.S. Cl. 280—661 **19 Claims**

1. A vehicle suspension system comprising a vehicle frame

member, a ground wheel having a peripherally extending ground engaging tire for engaging a road surface, a wheel rim member on which the tire is mounted for rotation about a generally horizontal axis of the wheel and defining a generally vertical central plane of the wheel lying radial to the wheel axis and substantially midway across the width of the tire, an inner member, bearing means mounting the rim member on the inner member for rotation relative thereto about the wheel axis, a suspension arm, pivot mounting means pivotally mounting the suspension arm on the frame member for pivotal movement about a horizontal axis allowing vertical movement of the ground wheel relative to the frame member, resilient suspension means resiliently supporting the suspension arm against vertical movement in an upward direction and coupling means coupling an outer end of the suspension arm to the inner member, said coupling means holding said inner member against rotation around the wheel axis, said coupling means and said inner member defining a pivot axis for pivotal movement of the suspension arm relative to the inner member, said pivot axis being horizontal and lying in said central plane, said coupling means being located below the wheel axis, and linkage means connected between said inner member and said frame member for controlling the orientation of the central plane of the ground wheel relative to the frame, said linkage means including means allowing limited pivotal movement of said inner member relative to said suspension arm to allow limited pivotal movement of said central plane relative to the frame to automatically accommodate changes in angle of the road surface relative to the frame and to automatically tend to maintain said central plane art right angles to the road surface.

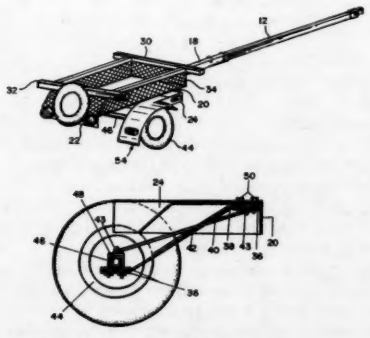


5,082,307

MINI BOAT/CAMPING TRAILER

Jack Hollingworth, Jr., Big Sugar Creek Farm, Powell, Mo. 65730

Filed Jan. 22, 1990, Ser. No. 467,930
Int. Cl.[5] B60G *3/28*
U.S. Cl. 280—699 **12 Claims**



1. A towed vehicle, comprising:

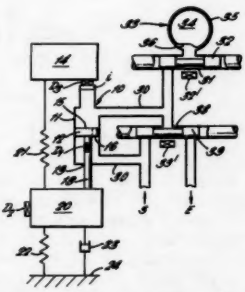
a) a longitudinal frame having front and rear portions;
b) means for securing said front portion to a towing hitch;
c) a first member disposed transversely across an intermediate portion of said frame adjacent said rear portion and secured thereto, said first member and said longitudinal frame forming a cross configuration;
d) first and second cantilever springs each having one end secured to respective ends of said first member and disposed toward said rear portion;
e) an axle, including ground engaging means, secured to the other respective ends of said first and second cantilever springs;
f) first and second stabilizer members each having one end secured to respective ends of said first member and disposed toward said rear portion and the other ends being secured to said axle;
g) respective said first and second cantilever springs and said first and second stabilizer members forming and "X"-shaped configuration when viewed along an axis of said axle;
h) a second member secured adjacent said end portion and disposed away from said first member; and
i) a bed secured to said first and second members.

5,082,308

VEHICLE SUSPENSION DEVICE

Neil Jones, Palm City, Fla., assignor to Group Lotus PLC of Norwich, Norfolk, United Kingdom

Filed Nov. 27, 1989, Ser. No. 441,828
Claims priority, application United Kingdom, Nov. 28, 1988, 8827745
Int. Cl.[5] B60G *17/015*
U.S. Cl. 280—707 **10 Claims**



1. A vehicle suspension device comprising a piston and cylinder arrangement included in a fluid control circuit, a first surface of the piston acting in a first chamber of the cylinder being of smaller area than a second surface of the piston acting in a second chamber of the cylinder, wherein said first chamber is connected via fluid connection means to a source of pressurized fluid and said second chamber is selectively connectable via fluid connection means to one or more of a source of pressurized fluid, an accumulator of pressurized fluid and an exhaust for pressurized fluid;

an actuator rod secured to said first surface of said piston extending longitudinally along the first chamber through an aperture in a wall thereof externally of the cylinder to interconnect the piston and an object supported on the suspension device, thereby forming the reduced area of the first surface of the piston in comparison with the second surface thereof;

said piston and cylinder arrangement interconnecting the sprung mass of a motor vehicle and a road wheel hub assembly thereof;

said fluid connecting means selectively interconnecting the second chamber of the cylinder;

one or more of a source of pressurized fluid, a compressible accumulator of pressurized fluid and an exhaust for pres-

surized fluid consisting of interconnecting pipework, a three-port, two-way valve selectively connecting either said source of pressurized fluid or said exhaust for pressurized fluid to said second chamber via a pipework intersection; and

an on-off valve selectively connecting said compressible accumulator of pressurized fluid to said second chamber and the output port of said three-port, two-way valve via said pipework intersection.

5,082,309

SUSPENSION SYSTEM FOR VEHICLES

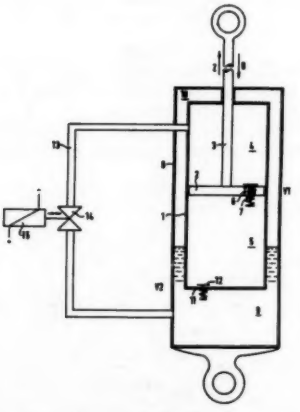
Paul Schütznер, Esslingen, and Martin Fritz, Rudersberg, both of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Nov. 8, 1989, Ser. No. 433,593

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1988, 3837863

Int. Cl.[5] B60G *11/26*

U.S. Cl. 280—714 **10 Claims**



1. Suspension system for vehicles having individual shock absorbers between each vehicle wheel and a vehicle body and with supporting forces for influencing the vehicle body position which are independently variable from wheel to wheel, comprising means for varying the supporting forces at each shock absorber of the vehicle wheels by controlling a difference between damping coefficients in a tension and a compression operation,

wherein the individual shock absorbers are double-acting hydraulic telescopic shock absorbers comprising:

a cylinder;

a piston guided displaceably in the cylinder and dividing the cylinder into first and second cylinder spaces at respective opposite sides of the piston;

the piston having a piston rod located on one side thereof and extending through the first cylinder space; and

line means connecting the first cylinder space to the second cylinder space;

a first non-return valve arrangement which only allows flow from the second cylinder space into the first cylinder space; and

a hydraulic reservoir connected to said first cylinder space via a controllable valve means and to the second cylinder space via a further non-return valve means which allows only for flow from the reservoir into the second cylinder space,

wherein the line means comprises two parallel line branches with a two position change-over valve means which connects either one line branch or the other between the reservoir and the first cylinder space,

wherein the change-over valve means comprises a piston-like control slide which is stressed towards one end position by the pressure in said first cylinder space and towards its other position by the pressure in the second cylinder space.

5,082,310

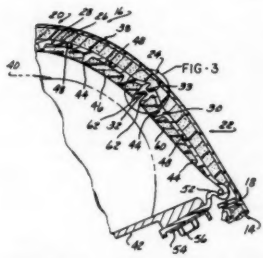
ARRANGEMENT FOR PROVIDING AN AIR BAG DEPLOYMENT OPENING

David J. Bauer, West Bloomfield, Mich., assignor to Tip Engineering Group, Inc., Farmington Hills, Mich.

Continuation-in-part of Ser. No. 432,559, Nov. 6, 1989. This application Jun. 20, 1990, Ser. No. 541,132

Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—732 **17 Claims**



FIG·3

1. A closure for covering an air bag deployment opening formed in the interior trim structure of an automotive vehicle, said closure including:

a substrate member having upper and lower door panel portions, said portions having adjacent sides separated by a gap, with a frangible bridging portion connecting said upper and lower door panel portions extending across said gap;

a skin smoothly overlying said substrate member, extending across said door panel portions, and said gap therebetween, said skin partially cut from the inside along said gap but smooth and uninterrupted on the outside; an uninterrupted foam plastic layer lying beneath said skin and atop said substrate member, extending across said seam and completely filling the space therebetween, whereby said bridging portion and said partially cut skin form a frangible seam between said upper and lower door panel portions.

5,082,311

PASSIVE IMPACT RESTRAINING VEHICULAR STEERING COLUMN ASSEMBLY

Joseph J. Melotik, Union Lake, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 1, 1990, Ser. No. 591,178

Int. Cl.[5] B62D *1/18*

U.S. Cl. 280—777 **14 Claims**

1. A vehicle energy absorbing steering column assembly, comprising:

a steering column;

a steering shaft rotatably supported within said steering column and adapted to receive a steering wheel at one end and to engage a steering gear mechanism at its other end;

an energy absorbing main support member affixed to said steering column and adapted to support the steering column from a portion of the vehicle body;

said main support member providing means for (i) allowing said steering column to collapse forwardly along a fixed axial path in the event of an impact of predetermined magnitude upon the steering wheel in the direction of the front of the vehicle, and (ii) absorbing the energy of such

impact solely by plastic deformation of said support member;

said main support member providing the sole support means for supporting said steering column beyond the point of any initial axial collapse of said steering column;

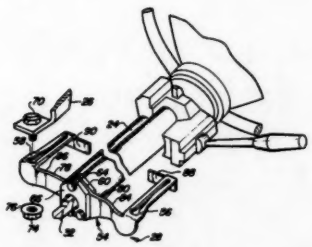
said main support member being frictionally clamped to the vehicle dashboard support structure by a fastening means located at two points dispose laterally from one another on opposite sides of said steering column;

said support member being released from frictional clamping engagement relative to the vehicle dashboard support structure substantially instantaneously upon receiving said impact of predetermined magnitude;

said fastening means including a guide portion for guiding said support member along said fixed axial path throughout the axial collapse of said steering column;

said fastening means providing an axis substantially perpendicular to said axial path and about which said support member may be plastically deformed to further absorb said impact;

said main support member comprising a bracket having a base portion and two side portions disposed on opposite ends of said base portion;



said base portion being disposed in a plane substantially perpendicular to the axis of said steering column and constituting a support for said steering column;

said side portions being disposed in a plane substantially perpendicular to said base portion;

each said side portion including a slot defined by oppositely disposed side rails;

said slot being sufficiently wide at the end nearest said base to allow a guide pin to pass therethrough, the remainder of said slot being of a width less than said guide pin;

one said side rail of each side portion being plastically deformable in said plane upon said steering column receiving an impact of predetermined magnitude sufficient to release said support member from the portion of the vehicle body supporting the steering column, whereby the energy of such impact may be absorbed in a controlled mode; and

the other said side rail of each side portion being sufficiently wide to withstand plastic deformation in said plane, thereby providing a guide plane engaging said guide pin and maintaining said steering column in said axis throughout the extent of any collapse of said steering column along said axis.

5,082,312

METHOD FOR COMPILING A PHOTO ADVICE BOOK

Lisa N. Arrowood, 11651 Chelsea Ct., Fishers, Ind. 46038

Filed Jun. 11, 1990, Ser. No. 536,189

Int. Cl.[5] B42D *15/00*

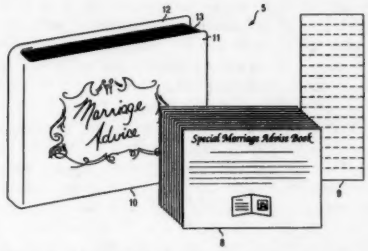
U.S. Cl. 283—67 **11 Claims**

1. A method for compiling an advice book, comprising the steps of:

providing printed instruction forms directable to at least one invitee to a gathering held for at least one person and instructing the invitee to be prepared to provide advice directed to said at least one person at the gathering and to bring to the gathering a picture which corresponds to one of the advice and the at least one invitee;

providing an advice book having a number of pages at least some of which are adapted to receive at least one picture mounted thereon and at least some of said number of pages having indicia thereon for receiving written advice;

causing a plurality of said printed instruction forms to be delivered to a corresponding number of invitees;



at said gathering, affixing a first picture brought to said gathering by one of said invitees to one of said pages and adding first advice corresponding to said first picture to a page whereby said first picture and corresponding first advice are clearly viewable simultaneously when said book is open; and,

repeating said affixing step for other of said invitees.

5,082,313

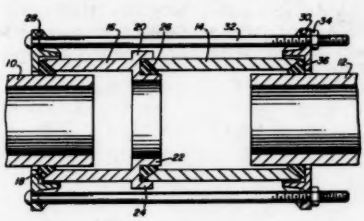
CUT-IN REPAIR COUPLING

Donald Bryant, 2420 Lavender La., and Thomas K. Archer, 4706 Glenlea, both of Texarkana, Ark. 75502

Continuation of Ser. No. 415,422, Sep. 29, 1989, abandoned, which is a continuation of Ser. No. 831,208, Feb. 20, 1986, abandoned. This application Nov. 28, 1990, Ser. No. 619,661

Int. Cl.[5] F16L *17/00*

U.S. Cl. 285—15 **5 Claims**



1. A cut-in repair coupling for connecting first and second free ends of a pipeline from which a section of pipe has been removed, said coupling comprising a one-piece first sleeve adapted to be placed around said first free end, said first sleeve being of cylindrical configuration on the interior and exterior surfaces thereof, a first end of said one-piece first sleeve having radially spaced annular walls defining therebetween a single annular socket integrally formed as part of said first end of said first sleeve, said coupling further comprising a second sleeve adapted to be placed around said second free end, said second sleeve being of cylindrical configuration on the interior and exterior surfaces thereof, each of said sleeves being of an axial length less than the length of the removed section of pipe, the sum of the axial lengths of said first and second sleeves being greater than the axial length of the removed section, first means to seal a second end of said first sleeve to the pipeline adjacent said first free end, said first sealing means comprising a first gland, said first gland having a first annular wall extending in a direction towards said second free end to define between said first annular wall and said first free end of said

pipeline a first annular compartment, first gasket means disposed in said first annular compartment, said first annular compartment being adapted to receive said second end of said first one-piece sleeve such that said second end of said first sleeve engages said first gasket means, second means to seal a first end of said second sleeve to the pipeline adjacent said second free end, said second sealing means comprising a second gland, said second gland having a second annular wall extending in a direction towards said first gland to define between said second annular wall and said second free end of said pipeline a second annular compartment, second gasket means disposed in said second annular compartment, said second annular compartment being adapted to receive said first end of said second sleeve such that said first end of said second sleeve engages said second gasket means, first and second bolts adapted to interconnect said first and second glands, and first and second nuts for mounting, respectively, on said first and second bolts, said first and second glands being adapted to be drawn toward each other by said first and second bolts and said first and second nuts, said single annular socket integrally formed with the first end of said first sleeve having an opening adapted to receive a second end of said second sleeve, a third sealing means disposed in said annular socket and adapted to be engaged by said second end of said second sleeve, said radially spaced annular walls comprising inner and outer annular walls, said inner annular wall being of greater axial length than said outer annular wall, an outer surface of said outer annular wall being devoid of protuberances, whereby upon said drawing together of said first and second glands, and first gasket means is compressed between said first gland and said second end of said first sleeve, said second gasket means is compressed between said second gland and said first end of said second sleeve, and said third gasket means is compressed between said first end of said first sleeve and said second end of said second sleeve.

5,082,314

DEVICE FOR CONNECTING THE ENDS OF A COMPOSITE TUBE SUBJECTED TO SEVERE AXIAL STRESS WITH METALLIC COLLARS AND MANUFACTURING PROCESS THEREFOR

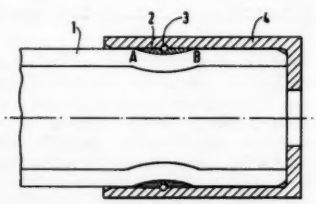
Jacques A. Aubry, Cabries, and Daniel A. Mauduit, Frejus, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Oct. 10, 1989, Ser. No. 419,240

Claims priority, application France, Oct. 13, 1988, 88 13468

Int. Cl.[5] F16L *55/17*

U.S. Cl. 285—174 **9 Claims**



1. A joint for connecting an end of a tube of composite material which is subject to relatively large axial stress to an annular metallic ferrule, comprising:

a composite tube composed of high strength fibers agglomerated by a polymerized synthetic resin having a wall;

an annular metallic ferrule formed as a band, having in the entire cross-section the shape of a segment of a circle including a curved portion and a flat portion, said curved portion of said ferrule facing said composite tube, said annular metallic ferrule being embedded in a receiving surface of said wall of said tube, and said flat portion of said annular metallic ferrule having a substantially uniform diameter and being flush with adjacent regions of said receiving surface of said tube;

an end member having an extending portion which engages said annular metallic ferrule;

a complementary connecting means disposed between said flat portion of said annular metallic ferrule and said extending portion of said end member, for connecting said tube to said end member;

wherein said band and said complementary connecting means together constitute an anchoring element for anchoring said tube of composite material to said end member.

5,082,315

HOSE COUPLING

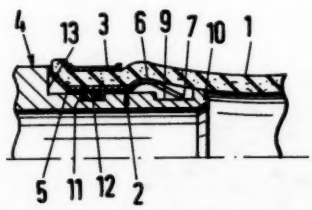
Heinz Sauer, Ronneburg, Fed. Rep. of Germany, assignor to Rasmussen GmbH, Maintal, Fed. Rep. of Germany

Division of Ser. No. 345,635, May 1, 1989, Pat. No. 4,969,668. This application Sep. 20, 1990, Ser. No. 585,619

Claims priority, application Fed. Rep. of Germany, May 4, 1988, 3815167

Int. Cl.[5] F16L *33/00*

U.S. Cl. 285—256 **8 Claims**



1. The combination of a nipple having an end and an external retainer which includes a flank facing away from said end with a coupling for separably and fluidtightly connecting the nipple to an end portion of a tubular component, particularly to an end portion of a flexible hose, said coupling comprising a tubular coupling member including a tubular section at least a portion of which is insertable into the end portion of the tubular component, said coupling member being arranged to receive said end of the nipple and further including a plurality of substantially prong-shaped coupling elements connected to said section and sloping toward the axis of said coupling member to engage said flank of the retainer upon introduction of said end of the nipple into said coupling member; discrete radially contractible means for urging the end portion of the tubular component against the exterior of said section, said urging means comprising a tubular clamping member having at least one radially inwardly extending corrugation; and at least one annular sealing element interposed between said nipple and said coupling member.

5,082,316

RELEASE MECHANISM AND METHOD WITH ALARM CIRCUIT

Russell Wardlaw, San Rafael, Calif., assignor to The Cookson Company, Phoenix, Ariz.

Continuation-in-part of Ser. No. 444,820, Dec. 1, 1989, Pat. No. 4,995,651. This application Dec. 14, 1990, Ser. No. 628,615

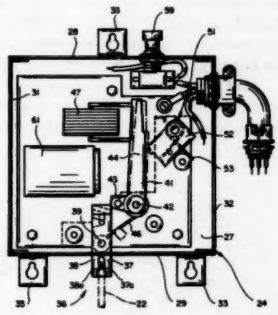
The portion of the term of this patent subsequent to Feb. 26, 2008, has been disclaimed.

Int. Cl.[5] E05C *3/12*

U.S. Cl. 292—201 **19 Claims**

1. In a release mechanism: a retaining member, electrically operated means for holding the retaining member in a holding position when energized and for releasing the retaining member from the holding position when deenergized, an alarm device, a source for supplying an energizing current to the

electrically operated means, and means connected to the source and to the electrically operated means and to the alarm device for storing a limited amount of energy from the source



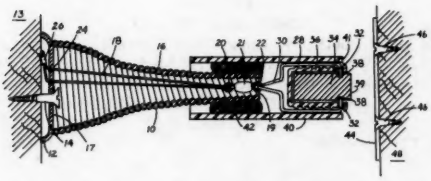
and delivering an energizing current to the electrically operated means and to the alarm device for a limited period of time after interruption of the current from the source.

5,082,317

SELF-ADJUSTING DOOR STOP AND CATCH

Robert G. Delaney, Jr., 210 Broadmoor Blvd., Lafayette, La. 70503

Filed Feb. 20, 1991, Ser. No. 658,049
Int. Cl.[5] E05C *17/56*
U.S. Cl. 292—251.5 **12 Claims**



1. A self-adjusting magnetic door stop and catch, comprising:

(a) a base plate mounted to a wall;

(b) a spring mounted to and projecting from said base plate, said spring having a plurality of helical coils around a longitudinal bore;

(c) a flexible load transferring means mounted to said base plate and extending through the longitudinal bore of said spring;

(d) a non-magnetic tube slidably positioned over the projecting portion of said spring;

(e) a magnet positioned within and protruding from said tube;

(f) means for connecting said magnet to said flexible load transferring means at the projecting end of said spring so that said magnet rotates about the longitudinal centerline of said spring; and

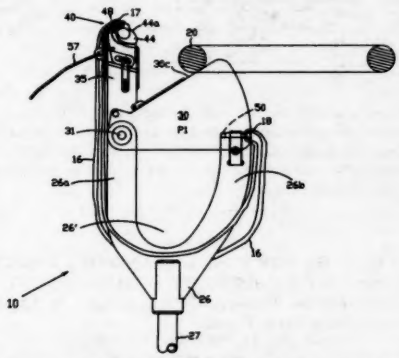
(g) a magnetically attractable plate mounted to a door opposite said magnet so as to attract and engage said magnet so as to hold said door in an open position.

5,082,318

GIRTH HITCHING MECHANISM

Jimmy L. Held; Charles E. Tallerino, and Ronald S. Reich, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 26, 1990, Ser. No. 604,727
Int. Cl.[5] B25J *1/00*; B63B *21/04*
U.S. Cl. 294—19.1 **16 Claims**



1. An apparatus for making a girth hitch from a girth loop on an object comprising:

means for supporting provided with a throat sized to receive said object therein between one side surface and an other side surface;

means rotatably mounted at said one side surface of the supporting means for responsively rotating when displaced in one direction by said object;

means provided at said other side surface of said supporting means for releaseably holding a latch ring element;

means mounted on the responsively rotating means having a hook element for engaging said latch ring element of the releaseably holding means when said responsively rotating means is displaced in said one direction by said object entering said throat; and

a girth loop carried on said supporting means having a latch ring bite portion connected to said latch ring element and a hook bite portion supported on said engaging means, whereby as said object displaces said engaging means in a different direction, said hook element of said engaging means disengages said latch ring element from said releaseably holding means, said hook bite portion of said girth loop is pulled free of said engaging means and said girth loop is pulled from said supporting means to form said girth hitch on said object.

5,082,319

LAYER CLAMP HAND WITH FLOATING SIDE CLAMPS AND CARTON FLAP HOLD-DOWN PLATEN

Russell J. Hurliman, Danville; Kenneth F. Becicka, Alvin, and Neal C. Chamberlain, Hoopeston, all of Ill., assignors to FMC Corporation, Chicago, Ill.

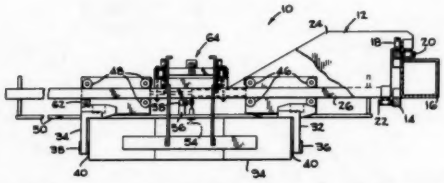
Filed Jan. 11, 1990, Ser. No. 463,690
Int. Cl.[5] B66C *1/42*
U.S. Cl. 294—119.1 **5 Claims**

1. A hand assembly for use on a palletizer having a Y-axis frame assembly, said hand assembly comprising:

a primary clamp assembly including a pair of opposed primary palms movable toward and away from each other, said primary clamp assembly carried on said Y-axis frame and including a pair of trolleys, one of said trolleys being an outboard trolley having a set of wheel contacting a top surface of said Y-axis frame, a second set of wheels contacting a lower side of said Y-axis frame, and a set of

locking blocks contacting said lower side of said Y-axis frame when one of said pair of opposed primary palms has made significant contact with a load;

means for moving said opposed primary palms;



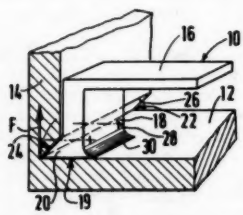
a floating clamp assembly including a pair of opposed side palms movable toward and away from each other, said floating clamp assembly carried on said primary clamp assembly, said side palms carried generally perpendicularly to said primary palms.

5,082,320

SEAT SUPPORT FOR PUBLIC TRANSPORT VEHICLES AND SEAT EQUIPPED WITH THIS SUPPORT

Jean-Louis Danton, Boulogne, France, assignor to Etablissements Compin, Paris, France

Filed Oct. 12, 1989, Ser. No. 420,587
Int. Cl.[5] A47C *15/00*
U.S. Cl. 296—63 **5 Claims**



1. Seat support of a catilever type for public transport vehicles, wherein said seat support has an inverted L-shape in a vertical sectional view, including a horizontal seat supporting part for attaching at least one seat thereto and a vertical foot (18) depending downwardly from said seat supporting part and having a lower end supported on a structure of the vehicle, a spur (20) formed proximate the lower end of said foot and extending into a housing (24) of complementary shape formed in an upright portion of the structure of the vehicle, said spur extending generally in parallel with an in a direction opposite the extent of said seat supporting part from said foot, such that a vertical downward force exerted against said seat supporting means causes said spur to impart a vertically upwardly directed force to said upright portion of the vehicle structure while inhibiting the generating of horizontal force components.

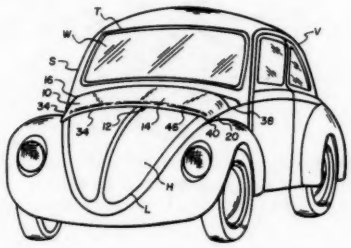
5,082,321

AIR STREAMLINING DEFLECTOR SHIELD FOR A MOTOR VEHICLE

Shelby L. Brewer, 793 Johnsonway, Sandy, Utah 84094

Filed Jan. 22, 1991, Ser. No. 644,298
Int. Cl.[5] B60J *1/20*
U.S. Cl. 296—91 **7 Claims**

1. An air streamlining deflector shield comprising: a one piece flexible polymeric plastic material mounted transversely behind a forward edge of the hood of a vehicle, said shield having a leading edge and a rearward edge and being generally elongated in shape and being molded to a generally bowed shape somewhat forwardly angled from sub-surface mounting positions of said shield, as to place the leading edge of the shield below the rearward edge of the shield in relation to the horizontal plane of the vehicle, said shield being shaped and constructed to be self-supporting to attaching portions of the shield located at lateral side ends of the shield, said attaching portions being shaped and constructed to be sub-surfacely mounted to lateral edges of the hood, said shield's shape and construction directing a volume of generally oncoming air, incident the leading edge of said shield, to pass under as well as over the shield, said shield having an upper and lower surface, said leading edge having a molded shape to conform somewhat to the general shape of the hood somewhat elevated at the



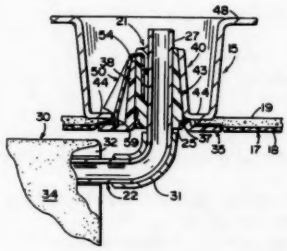
point where the leading edge crosses the hood, said rearward edge having a molded shape to generally conform in scale to the shape of the vehicle where deflected air current will pass over and around the vehicle when said vehicle is in forward motion, said shield between the leading and the rearward edge of the shield having a slightly concave shape rearward the leading edge crossing mostly the upper surface, said shape and construction directing the aforementioned air current under as well as over the entire exposed leading edge as well as across the upper and lower surface of the shield to combine generally just beyond the rearward edge of the shield where said directed air currents conjoin for superior effect to streamline airflow and deflect debris.

5,082,322

VISOR ROD MOUNT

John W. Cekander, Wyoming; Doug J. Redder, Zeeland, and Chris R. Waldron, Wyoming, all of Mich., assignors to Prince Corporation, Holland, Mich.

Filed Feb. 28, 1991, Ser. No. 662,237
Int. Cl.[5] B60J *3/02*
U.S. Cl. 296—97.9 **22 Claims**



22. A visor assembly comprising:

a visor having a visor body with a pivot rod mounted therein and having an end extending from said body for attachment of said visor to a vehicle;

a torque fitting comprising a polymeric member integrally molded to said extending end of said visor rod; and

a spring clip with an inner leg embedded within said torque

fitting and including an outer leg extending outwardly and downwardly from a side of said torque fitting with an end for engaging a vehicle support member for mounting said visor to a vehicle.

5,082,323

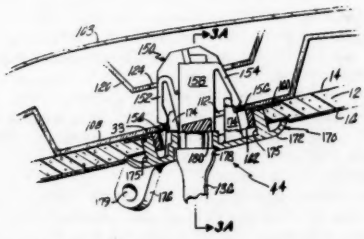
SUNSHADE FASTENER MODULE FOR USE WITH MODULAR HEADLINER

James D. Dowd, 35787 Congress Rd., Farmington Hills, Mich. 48018; David M. Hilborn, 8439 Hickory, Sterling Heights, Mich. 48077; Roy Weilant, 5076 Timber Ridge Trail, Clarkston, Mich. 48016, and Abdolhossein R. Lawassani, 845 Sheryl, Pontaic, Mich. 48054

Continuation of Ser. No. 205,150, Jun. 10, 1988, abandoned. This application Feb. 19, 1991, Ser. No. 657,606

Int. Cl.[5] B60R *13/02*; B60J *3/00*

U.S. Cl. 296—214 **7 Claims**



1. A modular headliner for mounting to a motor vehicle having a passenger compartment and a roof, said vehicle including a body structure defining sheet metal openings, which comprises:

a substrate generally configured to fit adjacent the roof of the vehicle, said substrate defining a substrate opening having a periphery;

a sunshade for the motor vehicle including a pivot rod having an end and an end fitting on the pivot rod; and

a sunshade substrate fastener for securing the sunshade to the substrate, said sunshade substrate fastener further including:

a base including a base rod opening through which the pivot rod extends, said base supporting the rod end fitting whereby the rod is retained therein, and a bezel portion sufficiently sized to cover the substrate opening at one surface of said substrate; and

a cover secured to said base and receivable through at least one of said sheet metal openings from within said passenger compartment for mating with the bezel, said cover including a platform which when assembled to the base, is spaced from the base of spacer ribs said spacer ribs being located within the substrate opening generally parallel to the bezel portion, said platform extending around the periphery of said substrate opening at an opposite surface of said substrate to sandwich the substrate between the bezel portion and the platform portion; and

means for securing the cover to the base such that the pivot rod and substrate are secured together by the sunshade substrate fastener independently of said body structure.

5,082,324

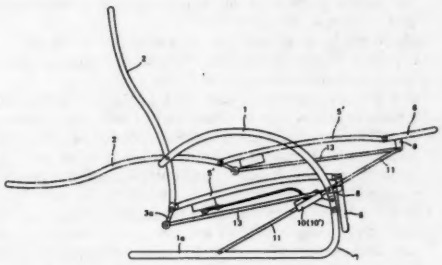
FOLDABLE RECLINING CHAIR

Hidenari Harada, Fukuoka, and Kensaku Fukaya, Tokyo, both of Japan, assignors to Ben Company Ltd., Fukuoka, Japan

Filed Apr. 16, 1991, Ser. No. 685,913

Int. Cl.[5] A47C *1/02*

U.S. Cl. 297—83 **2 Claims**



1. A chair comprising:

a base frame placeable on a floor; said base frame having left and right upper portions, said left and right upper portions each having distal and frontal ends, said base frame having a support plate positioned between the frontal ends of the left and right upper portions;

a back rest with top, middle, and bottom zones, said back rest being pivotably mounted at said middle zone to the distal ends of said left and right upper portions;

a seat having forward and rear sections, the seat being pivotably and supportedly mounted at its rear section to the bottom zone of the back rest;

a foot rest having far, near and back ends, the foot rest being pivotably mounted at said near end to and supporting the forward section of the seat so that it can move between a vertical position and a level position relative to the seat;

an extending member having anterior and posterior regions; the extending member being pivotably mounted at its anterior region to the back end of the foot rest;

tubular members slidably fitted on the extending member and fixedly mounted to the support plate; and

a connecting member with a first and second end being pivotably mounted at the first end to the back end of the foot rest and at the second end to the bottom zone of the back rest at a point below the mounting of the rear section of the seat to the bottom zone of the back rest.

5,082,325

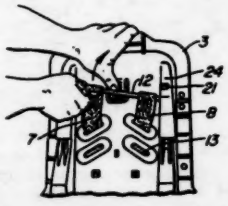
HARNESS ADJUSTMENT MECHANISM

Mark Sedlack, Cuyahoga Falls, Ohio, assignor to Century Products Company, Macedonia, Ohio

Continuation of Ser. No. 556,070, Jul. 20, 1990, abandoned. This application Jun. 14, 1991, Ser. No. 715,326

Int. Cl.[5] A47D *15/00*

U.S. Cl. 297—250 **11 Claims**



1. In a child's car seat including a unitary seat and back structure, an improved restraining apparatus comprising:

a harness, formed from a single belt having a middle portion and two ends;

a buckle through which said belt is threaded;

said unitary structure having a means for permitting the ends of said belt to pass from a front, seat portion of said portion of said unitary seat and back structure to a back portion of said unitary seat and back structure;

said buckle detachably secured to said front, seat, portion of said unitary seat and back structure wherein when said buckle is secured to said unitary seat and back structure the middle portion of said belt is secured to said unitary seat and back structure;

each of said harness ends having a plurality of loops;

a wire rod, having a first end and a second end, capable of being threaded through said loops;

a first groove located on said back portion of said unitary structure into which said first end of said rod is inserted;

a second groove, located on said back portion of said unitary structure and spaced a given distance from said first groove, into which said second end of said rod is pivotally secured;

a snap tab having two operative positions wherein said first operative position inhibits motion of said rod out of said first and second grooves and said second operative position permits at least said first end of said rod to be removed from said groove; and

wherein when said rod is threaded through said loops on each of said belt ends and said snap tab is in said first operative position, said belt ends are secured to said unitary seat and back structure.

5,082,326

VEHICLE SEAT WITH AUTOMATIC ADJUSTMENT MECHANISMS UTILIZING INFLATABLE AIR BAGS

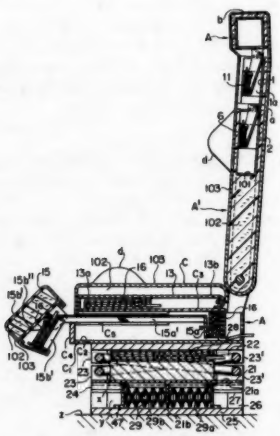
Hiroshi Sekido, Chiba; Tadashi Sakuma, Kanagawa, and Toshimichi Hioki, Gifu, all of Japan, assignors to Okamoto Industries, Inc., Tokyo, Japan

Filed Apr. 25, 1990, Ser. No. 514,000

Claims priority, application Japan, Apr. 28, 1989, 1-50325; Apr. 28, 1989, 1-50326; Apr. 28, 1989, 1-50327; Apr. 28, 1989, 1-50328; Apr. 28, 1989, 1-50329; Apr. 28, 1989, 1-50330; Apr. 28, 1989, 1-50331

Int. Cl.[5] **A47C** *3/00*

U.S. Cl. 297—284 R **13 Claims**



13. An adjustable vehicle seat comprising:

a seat back which provides a front surface against which an occupant sits, said seat back having an upper and a lower section, said lower section having a hollow portion therein, a plurality of first air bags positioned within said hollow portion, said first air bags being connected together so as to form a stack, said first air bags including at least one air communicating opening so as to provide communication between adjacent ones of said air bags, a first dogleg-shaped lever having a straight portion and a bend, one end of said bend being connected to said upper section of said seat back and another end of said bend being pivotally mounted to said supper section of said seat back, said straight portion extending into said hollow portion and being positioned adjacent said air bags, and means for inflating said first air bags so as to move said straight portion of said lever in a direction away from the front surface of said seat back, whereby said upper section of said seat back is moved in a direction toward the front surface of said seat back for adjusting the position of said upper section of said seat back;

said upper section having a second hollow portion therein, said seat back having an opening therethrough extending through said upper section into said second hollow portion, a headrest coupled to said upper section of said seat back, a plurality of second air bags positioned within said second hollow portion, said second air gabs being connected together so as to form a stack, said second air bags including at least one air communicating opening so as to provide communication between adjacent ones of said second air bags, a second dogleg-shaped lever having a straight portion and a bend, one end of said bend of said second lever being connected to said headrest and another end of said ben of said second lever being pivotally mounted to said upper section of said seat back, said straight portion of said second lever extending into said second hollow portion and being positioned adjacent said second air bags, and means for inflating said second air bags so as to move said straight portion of said second lever in a direction away from the front surface of said seat back, whereby said headrest is moved in a direction toward the front surface of said seat back for adjusting the position of said headrest;

a seat cushion having a top and bottom surface, said top surface on which an occupant sits, a seat including a front and a rear wall, a third dogleg shaped plate having a straight portion and a bend, said straight portion of said third dogleg shaped plate positioned below said bottom surface of said seat cushion, said straight portion being slidably movable in a direction parallel to said bottom surface, said bend provided to have one end bent downwardly and another end positioned toward said occupant, a plurality of third air bags positioned on an upper surface of said bend, said third air bags being connected together so as to form a stack, said third air bags including at least one air communicating opening so as to provide communication between adjacent ones of said third air bags, a support pad pivotally attached to the end of said bend portion of said third plate which is positioned toward said occupant, said support pad having a top and a bottom surface, said top surface of said support pad supporting a portion of said occupant's legs, said bottom surface positioned adjacent said plurality of third air bags, means for inflating said air bags so as to move said support pad in an upward direction for adjusting the position of said support pad, a vertical plate attached at a right angle to said straight portion of said third plate, a plurality of fourth air bags positioned between said vertical plate and a rear wall of said seat portion, said fourth air bags being connected together so as to form a stack, said fourth air bas including at least one air communicating opening so as to provide communication between adjacent ones of said fourth air bags, and mean for inflating said fourth air bags so as to slidably move said straight portion of said third plate in a direction away from a front wall of said seat back, whereby said support pad is moved in a direction away from said front wall of said seat back; and

a vehicle seat body having an upper and lower surface, said body having a front and rear wall, a pair of rails having a

convex shape provided on a floor of the vehicle, said pair of rails being positioned parallel to said seat body, a pair of frames having a concave shape attached to said lower surface of said seat body, said pair of frames slidably engaging with said pair of rails, a vertical partition wall extending vertically from said lower surface of said seat body at a predetermined position along said lower surface of said seat body, a rear frame extending vertically from said base and positioned below said seat body, a front frame extending vertically from said base and positioned below said seat body, a plurality of fifth air bags positioned between said vertical wall and said rear frame, said fifth air bags being connected together so as to form a stack, said fifth air bags including at least one air communicating opening so as to provide communication between adjacent ones of said fifth air bags, a plurality of sixth air bags positioned between said vertical wall and said front frame, said sixth air bags being connected together so as to form a stack, said sixth air bags including at least one air communicating opening so as to provide communication between adjacent ones of said sixth air bags, and means for inflating said fifth and sixth air bags, whereby said seat body slidably moves in one direction when said fifth air bags are inflated and said seat body moves in an opposite direction when said sixth air bags are inflated.

5,082,327

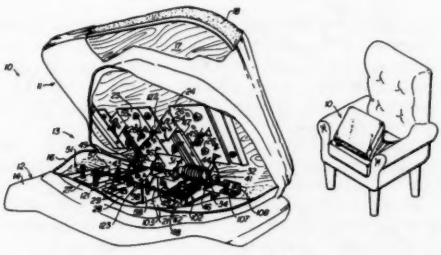
LIFT APPARATUS FOR USE WITH A CHAIR

Charles D. Crisp, 80 Colonial Dr., Carrollton, Ga. 30117

Filed Oct. 19, 1990, Ser. No. 600,323

Int. Cl.[5] A47C *3/20*

U.S. Cl. 297—313 **20 Claims**



6. A lift apparatus for use with chairs, seats, benches and the like having a seating portion comprising:

a bottom portion,

a top portion,

support means affixed to said bottom portion and to said top portion for mounting said top portion to said bottom portion for pivotal movement between a lowered position, a raised position and a neutral position intermediate said raised and lowered positions, said support means including spring means for urging said top portion toward said raised position, and

latch means for releasably securing said top portion in said lowered and neutral positions comprising a hook-shaped member extending from one of said top and bottom portions and a securing member movably mounted to the other of said top and bottom portions for movement between a locking position for engaging and securing said hook-shaped member and an unlocking position spaced from said locking position for releasing said hook-shaped member, said latch means further comprising bias means for urging said securing member toward said locking position, means for releasably securing said securing member in said unlocking position and means responsive to the movement of said top portion toward said raised position for dislodging said securing member from said unlocking position.

5,082,328

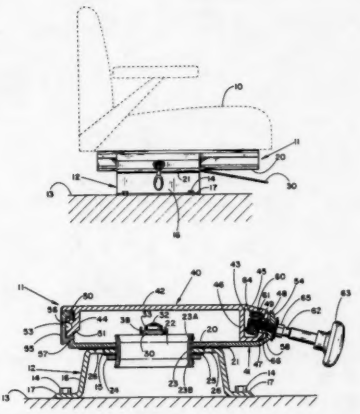
SWIVEL-SLIDE SEAT

Richard J. Garelick, 3324 Edmund Blvd., Minneapolis, Minn. 55406

Filed Oct. 15, 1990, Ser. No. 597,177

Int. Cl.[5] A47C *1/00*

U.S. Cl. 297—344 **9 Claims**



1. Apparatus for swivably mounting a seat to a supporting floor or boat deck or the like, said apparatus comprising:

a firs rigid flat, generally horizontal plate member;

means for coupling a seat to said first plate member;

a second rigid flat plate member parallel to and spaced just below said first plate member;

substantially large diameter, concentric, substantially identical circular openings through said first and second plate members:

a generally flat thin spacer between said plate members, said spacer having a central opening coextensive and concentric with the openings in said plate members, said spacer being rotatably slidably with respect to one of said plate members; and

a rigid metal collar around the periphery of said central openings, said collar in contact with said plate members such that said plate members are slidably rotatable with respect to one another about said collar, said collar flared outward toward its upper and lower edges for holding together said plate members and said spacer;

the contact area between said collar and said plate members protecting the swivel apparatus against damage from forces which may be applied to the swivel in use; and

a flat rigid retainer ring around the exterior of said collar adjacent a flared edge for holding said plate members and said spacer together in slidable contact.

5,082,329

KNOCK-DOWN CHAIR

Suzanne P. Mars, 23649 Duffield Rd., Shaker Hts., Ohio 44122

Filed Apr. 17, 1990, Ser. No. 510,143

Int. Cl.[5] A47C *7/00*

U.S. Cl. 297—442 **11 Claims**

1. A knock-down chair adapted to be placed on a floor, comprising:

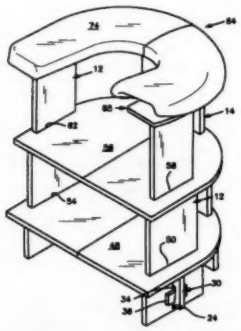
three upright support members, two of the support members being disposed at the sides of the chair and defining side supports, the third support member being disposed at the back of the chair and defining a back support;

a laterally extending brace interconnecting and spacing the side supports, the brace being disposed at a vertical elevation near the floor;

a seat member having a peripheral edge, the seat member

including slots through which the side supports and the back support extend, the slots being disposed proximate the peripheral edge of the seat member;

first support means included as part of the support members for supporting the seat member and for spacing the seat member from the floor at a vertical elevation above the brace;



a generally U-shaped back rest, the back rest including slots through which the side supports and the back support extend; and

second support means included as part of the support members for supporting the back rest and for spacing the back rest from the floor at a vertical elevation above the seat member, the back rest being disposed adjacent the upper end of the side supports and the back support.

5,082,330

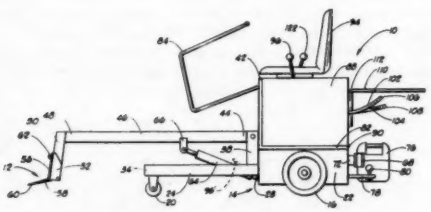
APPARATUS FOR REMOVING FLOOR COVERING

Tommie Holder, Snyder, Okla., assignor to Cooper, Inc., Okla.

Filed Jan. 7, 1991, Ser. No. 638,284

Int. Cl.[5] B32B *31/18*; F21C *47/00*

U.S. Cl. 299—37 **12 Claims**



5. The system for removing a floor covering comprising:

a frame;

a pump structurally independent from the frame for creating a flow of fluid; and

a plurality of conduits connected to the frame and to the pump;

means secured to the frame for supporting and driving the frame;

a blade secured to the frame; and

means secured to the frame for raising and lowering the blade.

5,082,331

CONTINUOUS MINER WITH DUCT ASSEMBLY

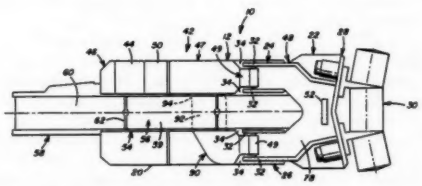
Maurice K. LeBegue, and Henry E. Wilson, both of Fairmont, W. Va., assignors to Tamrock World Corporation, N.V., Curacao, Netherlands Antilles

Continuation of Ser. No. 325,666, Mar. 20, 1990, Pat. No. 4,936,632, which is a continuation-in-part of Ser. No. 76,155, Jun. 20, 1989, Pat. No. 4,840,432. This application Mar. 29, 1990, Ser. No. 502,030

The portion of the term of this patent subsequent to Jun. 20, 2006, has been disclaimed.

Int. Cl.[5] E21C *35/22*

U.S. Cl. 299—64 **5 Claims**



1. A continuous miner comprising,

a mobile frame assembly having a front end portion, a rear end portion, a first side portion and a second side portion,

a boom assembly having a hollow interior portion extending from said mobile frame assembly,

said boom assembly having a first end portion pivotally connected to said mobile frame assembly by a plurality of connecting means and a second end portion spaced from said first end portion,

dislodging means connected to said boom assembly second end portion,

conveying means extending longitudinally along said mobile frame assembly, said conveying means having a conveying reach and a return reach below said conveying reach, said conveying means mounted on said mobile frame assembly for receiving and conveying material from said dislodging means,

dust collecting means including a fan assembly and first and second duct assemblies positioned on a first side portion of said mobile frame assembly for inducing a flow of air through said boom assembly hollow interior portion,

said fan assembly positioned on said mobile frame assembly at said mobile frame assembly rear end portion,

said first duct assembly extending longitudinally along said first side portion of said mobile frame assembly,

said first duct assembly having an end portion connected with said fan assembly and an opposite end portion,

said second duct assembly extending partially along said second side portion of said mobile frame assembly, said second duct assembly having an end portion connected with said first duct assembly, an opposite end portion and a crossover portion extending across said mobile frame assembly and said conveying means,

said first duct assembly opposite end portion and said second duct assembly opposite end portion being in fluid communication with said boom assembly hollow interior portion in all positions of said boom assembly.

5,082,332

LOAD RESPONSIVE BRAKE REGULATOR

Pasquale Tribuzio, Bitonto, and Francesco N. Mercieri, Turi, both of Italy, assignors to Bendix Altecna S.p.A., Modugno, Italy

Filed Jun. 19, 1990, Ser. No. 541,117

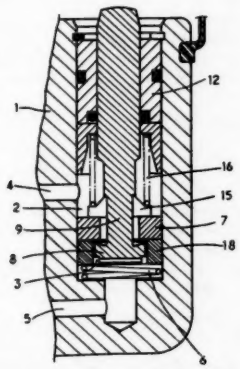
Claims priority, application Italy, Jun. 22, 1989, 67507 A/89

Int. Cl.[5] B60T *8/22*

U.S. Cl. 303—9.73 **3 Claims**

1. A brake regulator for a motor vehicle, comprising a body pierced with a bore in which an annular gasket defines first and

second chambers of which the first chamber is connected to a circuit of a master cylinder and the second chamber is connected to at least one brake motor, a valve-forming piston movable in axial translational motion in an assembly consisting of an annular spacer bearing against the annular gasket, the assembly consisting of said annular gasket and annular spacer being mounted so as to be movable in axial translational motion, the piston having a diameter larger than that of a central



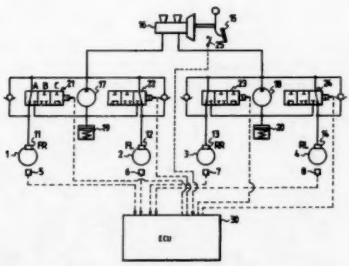
orifice of the annular gasket which forms a valve seat and being equipped with a pusher which passes through said central orifice and said first chamber and projects sealingly from the body, a spring located in said first chamber and biasing said piston toward said second chamber, and said second chamber including elastic means confined between said annular spacer and a bottom of said bore and biasing said assembly toward said first chamber.

5,082,333

ANTI-SKID CONTROL SYSTEM FOR USE IN MOTOR VEHICLE

Akira Fukushima, Kariya; Nobuhiko Makino, Anjo; Kiyoyuki Uchida, Susono; Hideo Inoue, Kanagawa, and Kazunori Sakai, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed May 21, 1990, Ser. No. 526,041
Claims priority, application Japan, May 23, 1989, 1-129653
Int. Cl.[5] B60T *8/66*
U.S. Cl. 303—96 **7 Claims**



1. An anti-skid control system for use in a vehicle, comprising:

wheel sensor means for sensing wheel speeds of each wheel of said vehicle;

road-surface determining means for determining a condition of a road surface on which said vehicle is running based on the sensed wheel speeds;

reference speed selecting means for selecting a reference speed in accordance with a sensed rear-right wheel speed and rear-left wheel speed, said reference speed selecting means determining a mean value speed of said rear-right and rear-left wheel speeds and a maximum speed between said rear-right and rear-left wheel speeds, said reference speed being selected as one of said means value speed and said maximum speed based on said determined road surface condition; and

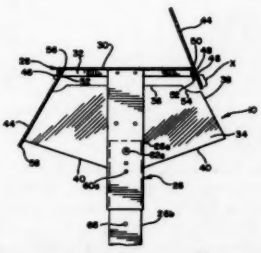
control means for performing slip control of said wheels based on said reference speed.

5,082,334

FOOD BREATH GUARD APPARATUS

Peter E. Beyer, Sheboygan, and Robert E. Moran, Jr., Sheboygan Falls, both of Wis., assignors to The Vollrath Company, Inc., Sheboygan, Wis.

Continuation-in-part of Ser. No. 352,882, May 17, 1989, abandoned. This application Jun. 7, 1991, Ser. No. 713,555
Int. Cl.[5] A47B *96/18*
U.S. Cl. 312—140.4 **32 Claims**



1. An apparatus configured for use with a food service area for protecting food arrayed in said food service area, the apparatus comprising:

a shield means for shielding said food; and

a support means for supporting said shield means;

said shield means being pivotably attached with said support means by at least one hinge means for effecting pivotable attachment;

said shield means being deployable in an operating position, said shield means depending from said support means in a predetermined attitude with respect to said support means when in said operating position;

said shield means having a first side and a second side, said at least one hinge means effecting said pivotable attachment intermediate said first side and said second side and establishing an extension of said shield means extending a first distance in a first direction from said at least one hinge means and an expanse extending a second distance in a second direction from said at least one hinge means, said first distance being less than said second distance, said extension engaging said support means when said shield means is in said operating position.

5,082,335

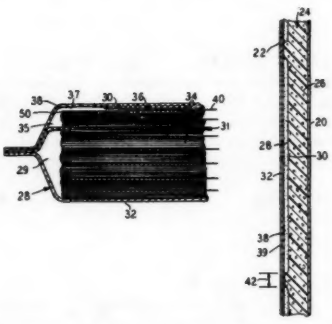
VACUUM INSULATION SYSTEM FOR INSULATING REFRIGERATION CABINETS

Nihat O. Cur, St. Joseph Township, Berrien County; Richard W. Kruck, Sodus Township, Berrien County; William S. White, St. Joseph, and David B. Kirby, St. Joseph Township, Berrien County, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 18, 1989, Ser. No. 452,063
Int. Cl.[5] F25D *11/00*
U.S. Cl. 312—401 **19 Claims**

1. A refrigeration appliance having an outer cabinet, a liner inside said cabinet, and thermal insulation interposed in a space between said cabinet and said liner, said thermal insulation comprising:

a plurality of vacuum thermal insulation panels, each of said panels comprising at least two hermetically sealed vacuum compartments defined by at least three walls of gas-impermeable barrier film laminate sealed together about their peripheries, said compartments being filled with a microporous filler insulating material and being evacuated of atmospheric gasses, each of said vacuum thermal insulation panels being secured within the space between said



liner and said cabinet, and adjacent panels being spaced apart from each other and from the corners of said cabinet; and

polyurethane foam insulation blow into the space between said liner and said cabinet and surrounding and permeating the gaps between said vacuum thermal insulation panels and said corners of said cabinet, said foam providing added thermal insulation and structural rigidity to said cabinet.

5,082,336

CONTROL CABINET WITH A CABINET DOOR

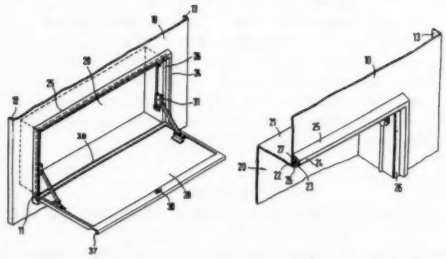
Udo Munch, Sinn, and Jurgen Zachrei, Dillenburg-Nanzenbach, both of Fed. Rep. of Germany, assignors to Rittal-Werk Rudolf Loh GmbH & Co. KG, Fed. Rep. of Germany

Filed Sep. 7, 1990, Ser. No. 579,624

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1989, 3930188

Int. Cl.[5] A47B *97/00*

U.S. Cl. 312—292 **8 Claims**



1. A control cabinet with a cabinet door having a cutout covered by a frame, comprising;

said frame connected in one piece to a trough-shaped insert (**20**) set into said cutout (**11**) in said cabinet door (**10**);

said frame having a connecting section (**22**) fixedly connected to said cabinet door (**10**) and covering an area of an outside surface of said cabinet door (**10**) adjoining said cutout (**11**);

a first sealing element (**26**) on a side of said connecting section (**22**) facing away from said cabinet door (**10**);

a U-shaped closure frame (**23, 24, 25**) having an open side facing said cabinet door (**10**) connected to said connecting section;

a second sealing element (**27**) inserted into said open side of said U-shaped closure frame (**23, 24, 25**);

a cover (**28**) pivotably seated at a hinged side (**38**) of said insert (**20**) which can be brought into a horizontal opened position by one of at least one cover hinge (**29**) and at least one cover stop (**31**) and maintained in said horizontal opened position;

said cover (**28**) having on an inside of said cover (**28**) a circumferential bevel (**36**) forming a holder for objects placed on said cover (**28**); and

said cover (**28**) being fastened by a closure element (**30**) in a closed position, covering an insert open side of said insert (**20**).

5,082,337

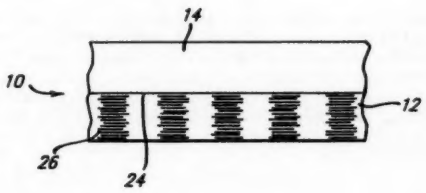
FILTER DEVICE EMPLOYING A HOLOGRAPHIC ELEMENT

Mao-Jin Chern, Rancho Palos Verdes, and John E. Wreede, Monrovia, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 16, 1988, Ser. No. 285,135

Int. Cl.[5] G02B *5/20, 5/32*

U.S. Cl. 359—15 **20 Claims**



1. A filter device comprising:

(a) non-holographic optical radiation filter means for filtering optical radiation of a first predetermined range of wavelengths and allowing infrared radiation to pass substantially unattenuated; and

(b) holographic means for diffracting optical radiation of a second predetermined range of wavelengths and allowing infrared radiation to pass substantially unattenuated,

said holographic means coupled with said nonholographic optical radiation filter means to form a filer device that transmits a narrow bandwidth of light at a third predetermined range of wavelengths.

5,082,338

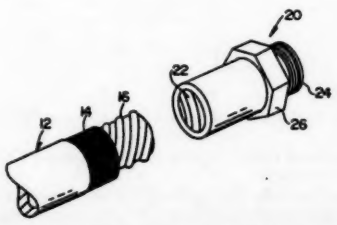
FIBER OPTIC CONDUIT-CONNECTOR ASSEMBLY

Ron Hodge, 1262 Providence Way, Lawrenceville, Ga. 30245

Filed Dec. 1, 1989, Ser. No. 444,447

Int. Cl.[5] G02B *6/36*

U.S. Cl. 385—81 **25 Claims**



2. A fiber optic conduit-connector assembly comprising:

a conduit having a flexible, crush resistant and fluid resistant

inner tube adapted for enclosing at least one optical fiber, an electromagnetic shielding layer disposed circumferentially about said inner tube, and a pressure tight outer layer disposed circumferentially about said shielding layer, said outer layer having an end portion stripped away to expose an end portion of said shielding layer;

an electrically conductive connector fixedly attached to at least one end of said conduit and adapted to allow at least one optical fiber to be passed therethrough, said connector having a first end for attachment to a coaxial cable entry port and a second end having a receptacle for insertion of an end portion of said inner tube;

said inner tube of said conduit having an end portion thereof inserted into said connector receptacle, said end portion of said shielding layer being disposed circumferentially about said second connector end and having connecting means mounted thereon for affixing said shielding layer end portion to said second connector end, and said connecting means and said end portion of said shielding layer having a pressure tight tube disposed thereabout; and

wherein said inner tube is helical convoluted tubing formed of radiation crosslinked ethylene tetrafluoroethylene and said second connector end is internally threaded for engagement with said inner tube.

5,082,339

OPTICAL READ-WRITE HEAD WITH DIFFRACTION GRATING STRUCTURE

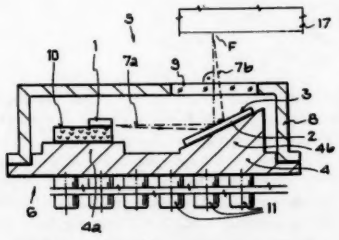
Richard Linnebach, Erdmannhausen, Fed. Rep. of Germany, assignor to Telefunken Electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Jul. 10, 1989, Ser. No. 377,405

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1988, 3823445

Int. Cl.[5] G02B *6/34, 6/12;* G11B *7/135*

U.S. Cl. 385—14 **21 Claims**



1. In an optical component having at least one laser element, a waveguide layer integrated on a semiconductor body, a grating structure acting as an optical system, with said grating structure being integrated on said waveguide layer, and at least one photodiode integrated in the semiconductor body; the improvement wherein said laser element and said semiconductor body are arranged on a single surface side of a carrier element such that a first beam of said laser element impinges directly on said grating structure; and wherein said first light beam diffracted from said grating structure exits from the component as a second light beam.

5,082,340

WAVELENGTH CONVERTING DEVICE

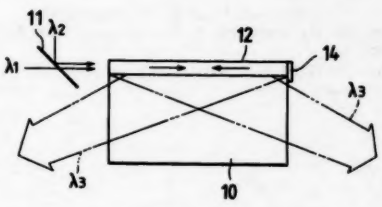
Shinichiro Aoshima; Hironori Takahashi, and Yutaka Tsuchiya, all of Shizuoka, Japan, assignors to Hamamatsu Photonics K. K., Shizuoka, Japan

Filed Apr. 27, 1990, Ser. No. 515,848

Claims priority, application Japan, Apr. 28, 1989, 1-110293

Int. Cl.[5] G02F *1/37*

U.S. Cl. 359—328 **24 Claims**



1. A wavelength converting device comprising:

a substrate;

a light waveguide of nonlinear optical material on said substrate, comprising means for introducing light in said light waveguide to generate Cerenkov radiation in said substrate; and

reflecting means provided at least one end face of said light waveguide, for reflecting a guided light beam back through said light waveguide.

5,082,341

INTEGRATED OPTICAL DEVICE WITH ZERO-GAP AND WELL-SPACED REGIONS

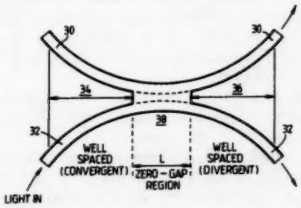
Robert G. Walker, Northampton, England, assignor to GEC-Marconi Limited, England

Filed Jan. 4, 1991, Ser. No. 638,203

Claims priority, application United Kingdom, Jan. 6, 1990, 9000318

Int. Cl.[5] G02B *6/10, 6/00*

U.S. Cl. 385—14 **4 Claims**



1. An integrated optical device including a directional coupler for transferring light energy between first and second waveguides having widths and electromagnetic field regions, the directional coupler including a first well-spaced region in which the first and second waveguides converge toward one another while the electromagnetic field regions associated with the waveguides interact, and a second zero-gap region having at least twice the width of either waveguide, said coupler having a transfer coupler length which, in the first region, exhibits a first dependence upon polarization with the transfer coupler length being shorter for transverse electric fields than for transverse magnetic fields, whereas in the second region, the transfer coupler length exhibits a second dependence upon polarization opposite to said first dependence, said first and second regions being dimensioned to control or eliminate the dependence of the directional coupler upon polarization of light in the waveguides.

5,082,342

ELECTRO-OPTIC WAVEGUIDE DEVICE

David R. Wight, Malvern Wells; John M. Heaton; Meirion F. Lewis, both of Malvern, and Christopher L. West, Malvern Wells, all of England, assignors to The Secretary of State for Defence in her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

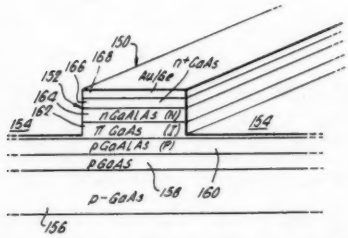
PCT No. PCT/GB88/00928, § 371 Date May 22, 1990, § 102(e) Date May 22, 1990, PCT Pub. No. WO89/04988, PCT Pub. Date Jun. 1, 1989

PCT Filed Oct. 31, 1988, Ser. No. 488,042

Claims priority, application United Kingdom, Nov. 20, 1987, 8727212

Int. Cl.[5] G02B *6/10;* **H01L** *29/161, 29/205, 29/225*

U.S. Cl. 385—8 **29 Claims**



1. An electro-optic waveguide device of multilayer construction including an array of electrically biasable waveguides of electro-refractive material, said device comprising:

(a) a waveguide core layer having a refractive index and two light confinement layers sandwiching said core layer therebetween, each of said confinement layers having a refractive index lower than said core layer refractive index, said waveguide core layer comprises at least part of a diode structure and said diode structure depletable of charge carriers under a reverse bias applied by means of said confinement layers;

(b) means defining grooving at least partly through said waveguide core layer and for defining individual waveguides, said individual waveguides forming an array;

(c) a grooving medium contained in said waveguides having a refractive index at least 1.5 less than said waveguide core layer refractive index, said means defining grooving and said medium comprising a means for optically isolating adjacent waveguides;

(d) a biasing means for each respective waveguide;

(e) means arranging said waveguides for inhibiting output of unwanted spatial modes; and

(f) said waveguides and said biasing means comprise a means for providing for radiation output from said waveguides to interfere and for generating a far field diffraction pattern having a main lobe steerable across an output region of the device.

5,082,343

ISOLATED OPTICAL COUPLER

David G. Coult, Bechtelsville, Pa.; Joel C. Masland, Flemington, N.J., and Michele A. Milbrodt, Macungie, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 20, 1990, Ser. No. 630,925

Int. Cl.[5] G02B *6/32;* **H01S** *3/30;* **G02F** *1/00*

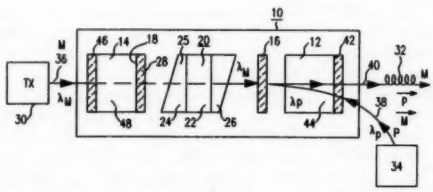
U.S. Cl. 385—34 **16 Claims**

1. An optical coupler for coupling a first optical signal at a first predetermined wavelength (e.g., λ_P) and a second optical optical signal at a second predetermined wavelength (e.g., λ_M) onto a single optical signal path, the coupler comprising:

a first collimating lens, including a first port and a second port disposed along the same endface thereof;

a second collimating lens including a single port, said second collimating lens disposed in a coaxial relationship with said first collimating lens;

wavelength selective means disposed between said first collimating lens and said second collimating lens capable of reflecting the first predetermined wavelength and transmitting the second predetermined wavelength; and



optical isolating means disposed between said second collimating lens and said wavelength selective means for essentially preventing counter-propagation of the second optical signal through said optical coupler.

5,082,344

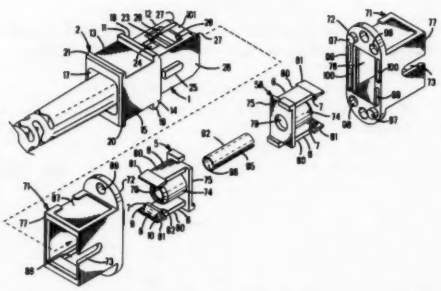
ADAPTER ASSEMBLY WITH IMPROVED RECEPTACLE FOR A PUSH-PULL COUPLING TYPE OF OPTICAL FIBER CONNECTOR

Denis G. Mulholland, 2916 Spring Valley Rd., Lancaster, Pa. 17601; Ronald R. Schaffer, 4000 Elmerton Ave., Harrisburg, Pa. 17107, and Gary N. Warner, 7617 Fishing Valley Rd., Harrisburg, Pa. 17112

Continuation-in-part of Ser. No. 491,755, Mar. 9, 1990. This application Sep. 5, 1990, Ser. No. 577,963

Int. Cl.[5] G02B *6/38*

U.S. Cl. 385—60 **9 Claims**



1. An adapter assembly for optical fiber connectors, the connectors including central passageway, alignment ferrule and optical fiber, the adapter assembly comprising; a base having profiled axial bore; a receptacle housing having at least one four sided compartment structure extending forward from said base and open at a front receiving end, and having therein; a receptacle comprising; a socket extending from said base within said receptacle housing and having bore axially aligned with the bore of the said base to form an extension thereof and adapted to receive an alignment ferrule of said optical fiber connector; said receptacle further having two catch pieces of cantilever form extending from the base parallel to and on opposing sides of the longitudinal axis of the socket and terminating in protrusions and lip structures for intermating with a push-pull type of optical fiber connector; the receptacle further characterized in that each said lip structure of said catch piece has at least three inwardly beveled surfaces leading from the lip edge of each said structure forward toward the interconnection with said push-pull optical fiber connector to facili-

tate lead-in of the connector during connection to the said adapter assembly.

5,082,345

OPTICAL FIBER CONNECTING DEVICE INCLUDING ATTENUATOR

Ray R. Cammons, Woodstock; A. Wallace Carlisle, Dunwoody, and N. R. Lampert, Norcross, all of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 13, 1990, Ser. No. 566,588
Int. Cl.[5] G02B *6/38*
U.S. Cl. 385—60 **17 Claims**

17. An optical fiber connection, which comprises:

a coupling housing which includes two end portions and which includes a pair of pins projecting radially from each end portion;

a sleeve which is disposed within said housing, and which has a slot formed longitudinally through a wall thereof;

first and second terminated optical fiber cables, each comprising;

an optical fiber cable which includes an optical fiber;

first and second plug assemblies each of which includes:

a cylindrically shaped plug having a passageway therethrough for holding an optical fiber end portion of the cable, each said plug being disposed in said sleeve such that the optical fiber end portion in one of said plugs is connected optically to the optical fiber end portion in the other one of said plugs;

a cylindrically shaped connector body having an enlarged portion at one end thereof with a key extending radially therefrom and a stepped passageway therethrough, an enlarged portion of said passageway being disposed in said enlarged portion of said connector body for receiving an end portion of said plug, said connector body including a circumferential groove and a circumferential camming groove adjacent to an opposite end thereof, said connector body having an extension at an opposite end and having a diameter less than the diameter of said enlarged portion;

a retaining ring which is disposed about and in engagement with said extension;

a retaining clip which is disposed about said circumferential groove;

a compression spring which is disposed about said connector body; and

a cap including an inwardly threaded cable entrance end and a connection end from which protrudes said plug, said cap including an annular, inwardly projecting lip having an inwardly projecting stud with said spring being in engagement with one side thereof and with said enlarged portion of said connector body and said retaining clip in engagement with the other side thereof, said cap being secured to said coupling housing and said stud of said lip being disposed at an inner end of said camming groove of said connector body to cause said key to be disposed generally centrally between two opposed camming slots opening to said connection end of said cap to facilitate assembly of said plug assembly to said coupling housing, each of said camming slots helically extending and communicating with a latching slot, each of said pins of said coupling housing being disposed in one of said latching slots; and

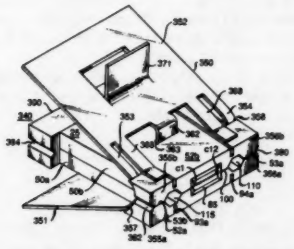
an attenuating element which is adapted to be moveable slideably along a substantial length of said sleeve, said attenuating element including a disc-like portion which is disposed within said sleeve in engagement with an end face of each said plug and which is supported from a rail having a portion which depends through said slot of said sleeve.

5,082,346

FIELD-ASSEMBLABLE MULTIFIBER OPTICAL CONNECTOR

Clyde J. Myers, Stone Mountain, Ga., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 28, 1990, Ser. No. 546,191
Int. Cl.[5] G02B *6/40*
U.S. Cl. 385—54 **13 Claims**



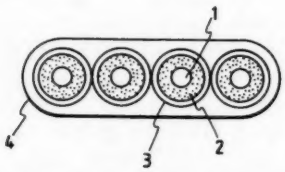
1. The improvement in an optical splice plug for a plurality of optical fibers; said plug comprising: lower and upper synthetic resinous guide plates having respective inner sides, and each having formed in its inner side an array of longitudinal grooves for receiving such fibers ("fiber grooves") and, on laterally opposite sides of such fiber grooves, a pair of grooves for receiving aligning pins for alignedly coupling such plug with another optical device ("pin grooves"), said plates being in transversely superposed relation to have a common front and rear, and having their inner sides confronting each other across a transverse gap therebetween so that their respective pin grooves are opposite each other to define for such pins two channels each comprising an upper and a lower pin groove and a portion therebetween of said gap ("pin channels"), and so that their respective fiber grooves are opposite each other to define for said fibers an array of channels having rear entries thereinto for said fibers, and each comprising an upper and lower fiber groove and a portion therebetween of said gap ("fiber channels"); said improvement comprising: mechanical retaining means coupled with said plates to form therewith a portable durably united assemblage, said retaining means comprising mutually coupled lower and upper contact means disposed outward of said lower and upper plates, respectively, and engaging said plates to maintain them transversely superposed, and to exert yieldable force thereon urging them towards each other, and said retaining means constituting a resilient clip comprising lower and upper tabs disposed outward of, respectively, said lower and upper plates and carrying clip portions constituting said lower and upper contact means, said resilient clip further comprising a pair of "U" shape deflecting springs extending on opposite lateral sides of said superposed plates between said tabs to join them and render them transversely deflectable, said springs projecting longitudinally from said tabs towards said front of said plates to most closely approach such front by the mid-regions of the respective "U" shapes defined by said springs.

5,082,347

TAPE-LIKE COATED OPTICAL FIBER

Nobuhiro Akasaka; Toshiaki Zakoh; Toru Yamanishi; Wataru Katsurashima, and Ichiro Ogasawara, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 14, 1990, Ser. No. 582,099
Claims priority, application Japan, Sep. 22, 1989, 1-247743
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—114 1 Claim



1. A tape-like coated optical fiber, comprising:

a plurality of optical fiber strands arranged side by side on a plane, each of said plurality of optical fiber strands having an optical fiber glass, a coating layer of ultraviolet curable resin on an outer periphery of said optical fiber glass, and a colored layer on said coating layer of ultraviolet curable resin, the colored layer including coloring material having volatile material no more than 5% in weight of said coloring material at 60° C.; and

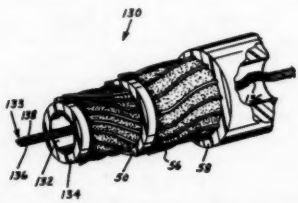
a tape coating of ultraviolet curable resin applied onto an outer periphery of said plurality of optical fiber strands so as to integrate said plurality of optical fiber strands with each other.

5,082,348

OPTICAL FIBER CABLE

Charles H. Gartside, III; Andrew J. Panuska, both of Lilburn, and Parbhubhai D. Patel, Dunwoody, all of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 311,306, Feb. 16, 1989, Pat. No. 4,971,419, which is a continuation of Ser. No. 180,652, Mar. 25, 1988, Pat. No. 4,826,278, which is a continuation of Ser. No. 721,533, Apr. 10, 1985, abandoned. This application Jul. 20, 1990, Ser. No. 556,929
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—111 3 Claims



1. An optical fiber cable which includes a longitudinal centerline axis, said optical fiber cable comprising:

a core which has a longitudinal centerline axis which extends colinearly with a longitudinal centerline axis of the cable, said core comprising:

a tubular member which is made of a plastic material and which extends colinearly with and is substantially parallel to the longitudinal centerline axis of the cable; and

a plurality of optical fibers which are disposed within said tubular member without intended stranding and which extend in a direction substantially parallel to the longitudinal centerline axis of the cable, each of said optical fibers including an optical glass transmission medium and at least one coating layer which encloses said optical glass transmission medium;

the ratio of the cross-sectional area of the plurality of optical fibers to the cross-sectional area within said tubular member intentionally not exceeding a predetermined value;

said optical fibers being able to become repositioned within said tubular member as said cable is handled to prevent undesirable added losses and each of said optical fibers having a length which exceeds the length of said tubular member;

a strength member; and

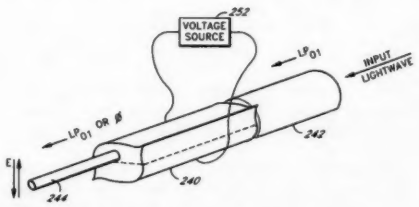
a jacket which is made of a plastic material and which encloses said core.

5,082,349

BI-DOMAIN TWO-MODE SINGLE CRYSTAL FIBER DEVICES

Amado Cordova-Plaza, Woodland Hills, and Herbert J. Shaw, Stanford, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation of Ser. No. 345,078, Apr. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 186,045, Apr. 25, 1988. This application Jun. 20, 1990, Ser. No. 541,091
Int. Cl.[5] G02B *6/10, 6/28, 6/02, 6/16*
U.S. Cl. 385—2 34 Claims



1. An apparatus, comprising:

an optical waveguide comprising a material having electro-optic properties, said optical waveguide including a first domain and a second domain, said domains collectively supporting a first optical propagation mode and a second optical propagation mode for optical energy propagating in said waveguide, said modes corresponding to first and second energy distribution patterns; and

a generator for producing a perturbation in the refractive index of one of said domains relative to the refractive index of the other of said domains of said optical waveguide, said perturbation altering the energy distribution of said optical energy to shift at least a portion of said optical energy from one of said patterns to the other of said patterns.

5,082,350

REAL TIME THREE DIMENSIONAL DISPLAY SYSTEM FOR DISPLAYING IMAGES IN THREE DIMENSIONS WHICH ARE PROJECTED ONTO A SCREEN IN TWO DIMENSIONS

Felix Garcia, Round Rock, and Rodney D. Williams, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 584,413, Sep. 17, 1990, which is a continuation of Ser. No. 390,473, Aug. 3, 1989, which is a continuation of Ser. No. 231,638, Aug. 8, 1988, abandoned, which is a continuation of Ser. No. 105,924, Oct. 7, 1987, abandoned. This application Sep. 19, 1989, Ser. No. 409,176
Int. Cl.[5] H04N *13/04*
U.S. Cl. 359—478 56 Claims

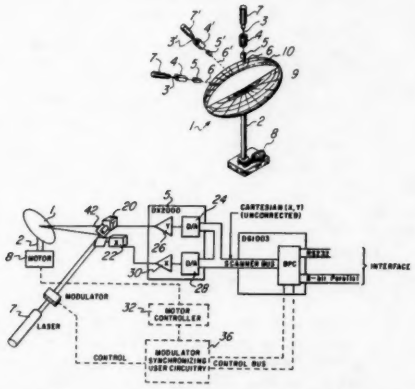
1. A three dimensional display system comprising:

(a) a light source for generating a light beam,

(b) means to form an image from said light beam in a predetermined x-y plane and transmit said image along a predetermined axis passing through said x-y plane; and

(c) continuously rotating light receiving means having an

axis of rotation along said predetermined axis for receiving and displaying said image, said light receiving means being rotatable about said predetermined axis, said light



receiving means having a first surface which, in all of its instantaneous states, has contiguous portions thereof at progressively different distances from said x-y plane and a second surface intersecting said first surface.

5,082,351

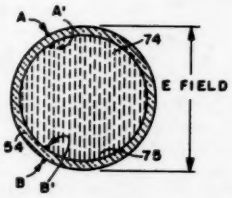
ENCAPSULATED LIQUID CRYSTAL MATERIAL, APPARATUS AND METHOD

James L. Fergason, Atherton, Calif., assignor to Manchester R & D Partnership, Pepper Pike, Ohio

Division of Ser. No. 114,073, Oct. 27, 1987, Pat. No. 4,844,873, which is a division of Ser. No. 585,883, Mar. 2, 1984, Pat. No. 4,707,080, which is a continuation-in-part of Ser. No. 302,780, Sep. 16, 1981, Pat. No. 4,435,047, and a continuation-in-part of Ser. No. 477,138, Mar. 21, 1983, Pat. No. 4,606,611, and a continuation-in-part of Ser. No. 477,242, Mar. 21, 1983, Pat. No. 4,616,903. This application Apr. 14, 1989, Ser. No. 339,072

Int. Cl.[5] G02F *1/133*

U.S. Cl. 359—51 **22 Claims**



1. Liquid crystal apparatus, comprising liquid crystal material, containment means for inducing a generally non-parallel alignment of said liquid crystal material which in response to such alignment at least one of scatters and absorbs light and which in response to a prescribed input reduces the amount of such scattering or absorption, reflector means for reflecting light scattered by or transmitted through said liquid crystal material, further comprising support means for supporting said liquid crystal material and containment means, a first electrode means at one side of said liquid crystal material and containment means remote from said support means, and a second electrode means between said support means and said liquid crystal material and containment means, said electrode means being positioned to apply electric field to said liquid crystal material as such input, said support means and said second electrode means being substantially optically transparent, said reflector means comprising said first electrode means, said first electrode means comprising electrically conductive, optically reflective ink, and said ink comprising silver flake dispersed in a solution of an electrically non-conductive, generally optically transparent binder medium.

12. A liquid crystal apparatus, comprising a plurality of volumes of liquid crystal material assembled in a medium, said assemblage of volumes of liquid crystal and medium characterized in having combined resistivity to allow an electric field to be impressed thereacross, said liquid crystal characterized in having positive dielectric anisotropy and being operative to align with respect to such an applied electric field and further characterized to undergo alignment due to surface interaction with said medium in the absence of such an electric field, and the apparatus being further characterized in providing an optical response to an applied electric field by matching ordinary index of refraction of the liquid crystal with the index of refraction of the medium; and

wherein said medium comprises a compound selected from the group consisting of cyanoethyl cellulose, acrylonitrile butadiene rubbers, phenolics, polyvinyl alcohol, polyvinyl fluoride, phenol formaldehyde, cellulose acetate, polyvinyl chloride, urethane elastomers, cellulose nitrate, regenerated cellulose, chlorosulphonated polyethylene, polyacrylonitrile, cellulose acetate butyrate, Nylon, polyester, urea formaldehyde, alkyd, and a mixture of two or more thereof.

5,082,352

FERROELECTRIC LIQUID CRYSTAL APPARATUS

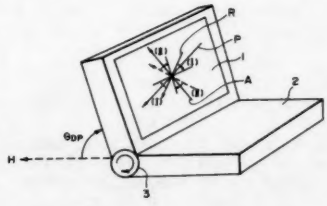
Hideyuki Kawagishi, Fujisawa; Hirofumi Iwamoto, Hiratsuka, and Yoshihiro Onitsuka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1989, Ser. No. 413,232

Claims priority, application Japan, Sep. 29, 1988, 63-242573; Sep. 29, 1988, 63-242574; Sep. 29, 1988, 63-242575; Sep. 29, 1988, 63-242576

Int. Cl.[5] G02F *1/13*

U.S. Cl. 359—63 **16 Claims**



1. A ferroelectric liquid crystal apparatus, comprising:

a ferroelectric liquid crystal cell including a pair of substrates each having an electrode and an alignment film thereon, said alignment films being respectively provided with uniaxial oritentation axes which are provided in parallel and each extending in the same direction from upper right to lower left or from lower left to upper right with respect to a direction normal to said liquid crystal cell;

a first polarizer having a transmission axis set within a region (I) defined by a clockwise angle of 45° from the direction of the uniaxial orientation axes;

a second polarizer having a transmission axis set within a region (II) defined by a clockwise angle of 45° from the direction perpendicular to the direction of the uniaxial orientation axes; and

a mechanism for adjusting an angle of the ferroelectric liquid crystal cell standing up from a horizontal plane.

5,082,353

LIQUID-CRYSTAL DISPLAY APPARATUS

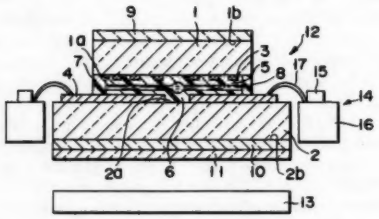
Kazuo Kawasaki, Hyogo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 8, 1989, Ser. No. 348,422

Claims priority, application Japan, May 11, 1988, 63-112506; May 30, 1988, 63-130378; May 31, 1988, 63-131415; Feb. 20, 1989, 1-38231

Int. Cl.[5] G02F *1/13*

U.S. Cl. 359—63 19 Claims



1. A liquid-crystal display apparatus comprising:

first and second substrates opposing each other and having electrodes formed on opposing surfaces thereof, at least one of the electrodes being transparent;

a nematic liquid crystal layer interposed between said first and second substrates and having a pre-tilt angle θ of greater than 1° with respect to the surfaces of said first and second substrates ,and having a twist angle of 180° to 360° from said first substrate to said second substrate;

a first polarizer arranged on that side of said first substrate which faces away from the electrodes formed thereon;

a second polarizer arranged on that side of said second substrate which faces away from the electrodes formed thereon; and

an optical retardation member located between said first and second polarizers, wherein a value of $R=\Delta n \cdot d \cdot \cos^2\theta$ ranges from 0.4 to 0.8, where Δn is an optical anisotropy of a material of said nematic liquid crystal layer, d is a thickness of said liquid crystal layer in μm, and θ is the pre-tilt angle of said liquid crystal layer, and a value of $R'=\Delta n' \cdot d'$ ranges from $0.22+0.55m$ to $0.42+0.65m$, or from $0.47+0.55m$ to $0.67+0.65m$ (m=0, 1, or 2), where $\Delta n'$ is the optical anisotropy of said optical retardation member and d' is the thickness of said optical retardation member in μm.

5,082,354

OPTICAL SWITCH AND COLOR SELECTION ASSEMBLY

Michael H. Kalmanash, Los Altos, Calif., assignor to Kaiser Aerospace and Electronics Corporation, Foster City, Calif.

Filed Aug. 29, 1989, Ser. No. 400,156

Int. Cl.[5] G02F *1/43*

U.S. Cl. 350—339 F 23 Claims

1. An apparatus for providing optical switching of a nonpolarized beam of light by an observer comprising:

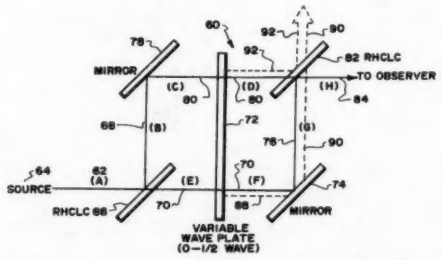
(a) first beam separating means adapted to receive the beam of light, for transmitting a first portion of said light beam having a first polarization orientation and for reflecting a second portion of said light beam having a second polarization orientation;

(b) first wave orientation reversal means in optical communication with said first beam separating means, for reversing the orientation of and reflecting said reflected second portion of said light beam;

(c) variable wave retardation means, adapted for receiving and transmitting light from both said first beam separating means and from said first wave orientation reversal means, for selectively retarding the polarization orientation of light transmitted therethrough;

(d) second wave orientation reversal means in the path of said first light beam portion for reversing the orientation of light transmitted through said variable wave retardation means and for reflecting said first light beam portion;

(e) second beam separating means adapted for receiving said first and second light beam portions from said second



wave orientation reversal means and said variable wave retardation means, respectively, and further adapted for transmitting those light beam portions having said first orientation and for reflecting those light beam portions having said second orientation.

5,082,355

TECHNIQUE FOR MANUFACTURING A LIGHT MODULATING DEVICE

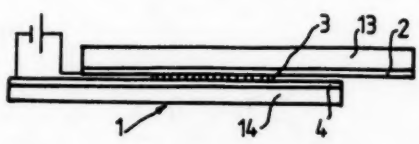
Bernard Warszawski, Paris, France, assignor to Alpine Polyvision, Inc., Hackensack, N.J.

Continuation of Ser. No. 221,542, Jul. 19, 1988, abandoned. This application Jan. 10, 1990, Ser. No. 462,979

Claims priority, application France, Jul. 24, 1987, 87 10565

Int. Cl.[5] G02F *1/01*

U.S. Cl. 359—265 33 Claims



1. A process for manufacturing a light-modulating cell, comprising the following steps:

A) manufacturing a solid, flexible, composite film comprising:

1) at least one layer of a material having ionic electroconductivity, comprising a homogeneous mixture of solid consistency, comprising (a) a hydrosoluble salt or a hydrosoluble mixture of salts of at least one metal which can be cathodically deposited from an aqueous solution of one of its simple or complex ions, (b) at least one initially hydrosoluble film forming polymer resin, (c) water, and (d) an auxiliary redox couple; the constituents (a), (b), (c), (d) selected in a group allowing a plastic or viscoelastic deformability; the at least one layer applied onto

2) a layer of electrically conductive electrode material;

B) cutting out an element from the composite film; and

C) applying and maintaining the cut out element in contact with a transparent electronically conductive electrode material, such that the material having ionic electroconductivity is interposed between the electronically conductive electrode materials.

5,082,356

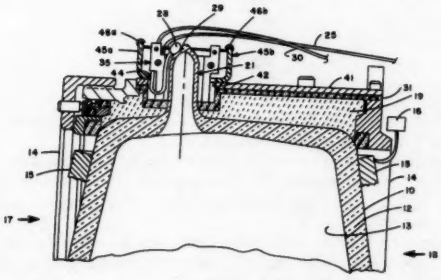
TEMPERATURE CONTROL APPARATUS FOR CONTROLLING METALLIC VAPOR PRESSURE IN A CLOSED CELL

Thomas Haraden, Ipswich; Harold L. Hough, Beverly, and Philip Moskowitz, Georgetown, all of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Jan. 25, 1990, Ser. No. 470,278

Int. Cl.[5] G02B *5/00*

U.S. Cl. 359—886 **14 Claims**



1. Temperature control apparatus for maintaining metallic vapor at a constant pressure within the interior of a hollow closed cell comprising:

a hollow reservoir external to said cell and having an interior connected to the interior of said cell, the volume of said reservoir interior being substantially smaller than the interior volume of said cell;

means to heat the interior of said cell to a temperature T_1;

a temperature sensor attached to the exterior of said reservoir;

heater means engaging the exterior of said reservoir for heating the interior of said reservoir to a temperature T_2 less than T_1;

conductive heat removal means engaging at least a portion of the exterior of said reservoir and said heater means; and

a temperature controller operatively connected to said sensor and to said reservoir heater means for energizing said reservoir heater means and maintaining said temperature T_2 substantially constant.

5,082,357

METHOD AND DEVICE FOR CORRECTING VERTICAL FRAMING ERRORS

Josef Haas, Siemensstr. 14/6/33, A-1210 Vienna, and Ernst Tschida, Bergheidengasse 8/3/8, A-1130 Vienna, both of Austria

Filed Oct. 11, 1990, Ser. No. 596,061

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1989, 3934420

Int. Cl.[5] G03B *21/46*

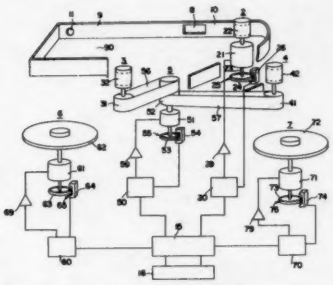
U.S. Cl. 352—160 **8 Claims**

1. A method of correcting vertical framing errors in the projection of an intermittently transported perforated motion picture film in projection apparatus that includes a film transport sprocket engaging film perforations, said sprocket being driven by an electric motor whose rotor is connected with an angle indicator device which delivers position signals corresponding to the angular position of said rotor to a regulating device for controlling said electric motor,

comprising the steps of

measuring a series of frame positions over a plurality of frames with a geometrically accurate measuring film,

storing data on said series of measured frame positions and periodically changing the position of said angle indicator disk relative to said film transport sprocket by a correction



value as a function of said stored series of measured frame positions data.

5,082,358

POLYMER OF VINYL-BIPHENYL DERIVATIVE ADAPTED FOR OPTICAL USE

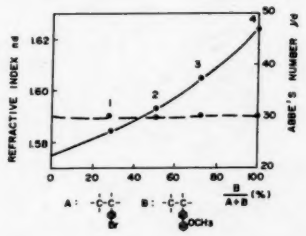
Masayoshi Tabata, Sapporo; Nobuo Kushibiki, Ebina, and Yoko Yoshinaga, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 58,842, Jun. 5, 1987, abandoned. This application Jun. 22, 1989, Ser. No. 371,647

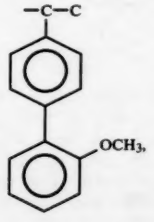
Claims priority, application Japan, Jun. 6, 1986, 61-131433; Nov. 11, 1986, 61-266692

Int. Cl.[5] G02B *1/04;* **C08F** *228/04, 216/14*

U.S. Cl. 359—642 **1 Claim**



1. An optical device capable of a high refractive index, stability against moisture and effective transparency which comprises a lens or prism having an optical surface causing a refraction or reflection comprising: a shaped body of a polymer of (i) a vinylbiphenyl derivative having recurring units selected from those represented by the formulas:



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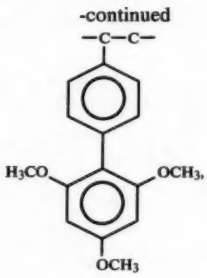
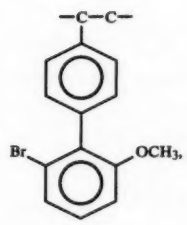
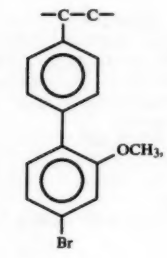
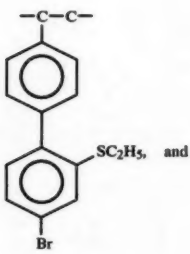
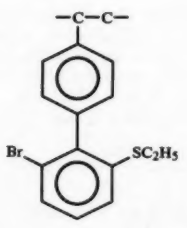










and of (ii) recurring units resulting from a monomer selected from the group consisting of methyl methacrylate, acrylonitrile, acrylic acid esters, dienes, vinylpyridine, maleic anhydride, fumaronitrile, vinyl ether, epoxy monomers, styrene monomers and halogenated styrenes having 1 to 5 halogen atoms selected from chlorine and bromine atoms, wherein the polymer has a refractive index from 1.57 to 1.75.

5,082,359

(2) **DIAMOND FILMS AND METHOD OF GROWING DIAMOND FILMS ON NONDIAMOND SUBSTRATES**

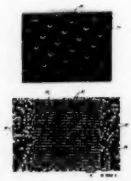
Allen R. Kirkpatrick, Lexington, Mass., assignor to Epion Corporation, Bedford, Mass.

Filed Nov. 28, 1989, Ser. No. 442,121

Int. Cl.[5] **C23C** *16/18, 16/46, 16/48, 16/50*

U.S. Cl. 359—642 **33 Claims**

(3)



1. A method of forming a diamond film on a nondiamond substrate, comprising the steps of:

preparing a surface of a substrate for diamond film deposition by introducing to the surface of the substrate a plurality of minute surface irregularities in a predetermined pattern;

applying at least one diamond seed particle within the irregularities, the seed particles having dimensions smaller than the irregularities; and

(4) depositing a diamond film on the surface of the substrate.

22. A diamond-coated product comprising a substrate and a synthetic, polycrystalline diamond coating formed by a plurality of individual diamond crystals secured to at least a portion of the substrate, wherein the crystals which comprise the film are present on the substrate at a density ranging from about 10^4 to about 10^{10} crystals per square centimeter and said crystals are formed on the substrate by creating a predetermined pattern of irregularities in the surface of the substrate, seeding the irregularities with a diamond seed material, and growing diamond crystals from the seed material by deposition.

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(5) 5,082,360

COMPOUND ZOOM LENS

Susumu Sato, Chiba; Koichi Wakamiya, Tokyo, and Koichi Ohshita, Kawasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

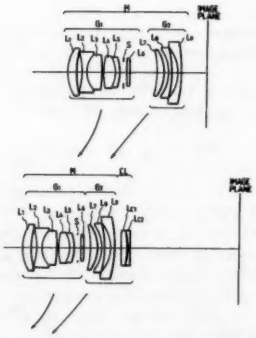
Filed Feb. 19, 1991, Ser. No. 656,688

Claims priority, application Japan, Feb. 19, 1990, 2-37678

Int. Cl.[5] **G02B** *15/08, 15/16*

U.S. Cl. 359—675 **21 Claims**

(6)



1. A compound zoom lens optical system capable of varying a zooming range, including

a variable focal length photographing lens consisting of a first lens group having a positive refracting power, and a

second lens group having a negative refracting power from an object side in turn; and

a conversion lens separably added to an image side of said variable focal length photographing lens, and simultaneously movable along an optical axis to be interlocked with at least one of said first and second lens groups of said variable focal length photographing lens so as to change a synthesized focal length with said variable focal length photographing lens, and

wherein said variable focal length photographing lens and said conversion lens satisfy the following conditions:

$$-1.5<\Phi_1/\Phi_2<-0.8$$

$$-1.1<\Phi_1/\Phi_{23}<-0.2$$

where Φ_1 is the refracting power of said first lens group, Φ_2 is the refracting power of said second lens group, and Φ_{23} is a synthesized refracting power of said second lens group and said conversion lens.

5,082,361

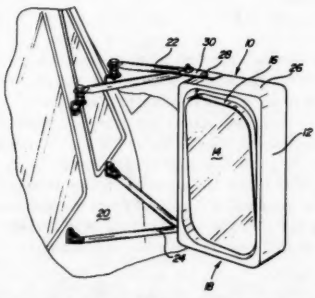
HORIZONTALLY AND VERTICALLY MOVABLE REMOTE CONTROLLED MIRROR UNIT FOR COMMERCIAL VEHICLES

Clyde M. McKee, 22175 Bernard St., Taylor, Mich. 48180

Filed Mar. 11, 1991, Ser. No. 668,349

Int. Cl.[5] G02B *7/18;* B60K *1/06*

U.S. Cl. 359—876 **6 Claims**



1. A remote controlled mirror unit mounted on a commercial vehicle comprising:

a mirror assembly;

a support structure for mounting said mirror assembly to said vehicle, said support structure including two spaced apart brackets;

said mirror assembly including a mirror housing, a multi-directional mirror drive mounted in said housing, and a mirror mounted to said mirror drive;

said mirror drive including means for moving said mirror about both a vertical axis and a horizontal axis;

said mirror assembly is pivotably associated with said brackets along an axis whereby said mirror assembly is pivotable about said axis; and

said assembly is pivotable about said axis through at least 180 degrees with respect to said spaced apart brackets.

5,082,362

ZOOM LENS FOR A VARIABLE DEPTH RANGE CAMERA

John L. Schneiter, Latham, N.Y., assignor to General Electric Company, Schenectady, N.Y.

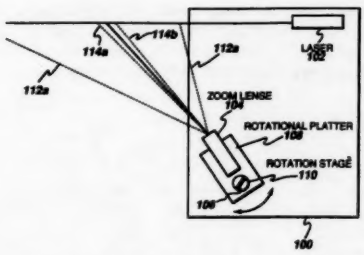
Filed Jul. 2, 1990, Ser. No. 547,253

Int. Cl.[5] G01C *3/00, 5/00;* G02B *15/00, 27/00*

U.S. Cl. 356—1 **15 Claims**

1. An apparatus for a variable depth triangulation ranging system, the ranging system including means for emitting a light beam, means for focusing an emitted light beam on an object, and light sensitive means; said apparatus comprising:

zoom lens means for imaging reflected light onto said light sensitive means, a distance between said zoom lens means and said light sensitive means being substantially fixed when in an operative condition, said light sensitive means being rotatable relative to said zoom lens means; and



means for adjustably positioning said light sensitive means and said zoom lens means such that an emitted light beam, a plane axis through said zoom lens means, and an image line through said light sensitive means all intersect at approximately a common point and satisfying the Scheimpflug condition.

5,082,363

OPTICAL DISTANCE MEASURING APPARATUS AND METHOD USING LIGHT PROJECTION PULSES

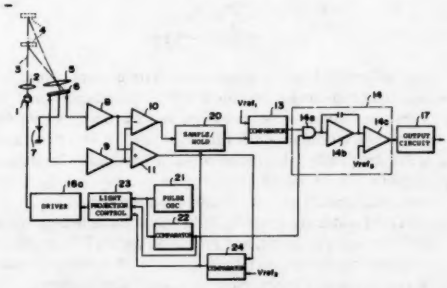
Hiroaki Nakanishi, Nagaokakyo; Hidehiro Fukumoto, Hirakata; Kuniharu Shibata, Takatsuki, and Hidetoshi Matsumoto, Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 307,821, Feb. 8, 1989, abandoned. This application Dec. 12, 1990, Ser. No. 625,683

Claims priority, application Japan, Feb. 12, 1988, 63-31515; Feb. 15, 1988, 63-32182; Aug. 30, 1988, 63-217973

Int. Cl.[5] G01C *3/00, 5/00*

U.S. Cl. 356—1 **14 Claims**



1. A distance measuring apparatus including light projecting means which has a light projecting device and projects a collimated light beam toward a detecting region and light detecting means having a position sensitive device which has an optical axis arranged so as to cross an optical axis of said light projecting means at a predetermined angle and receives diffused reflected light from an object and outputs at least two currents corresponding to light detecting positions, in which a distance to such object is detected on the basis of said light detecting positions of said position sensitive device, said apparatus comprising:

adding means for adding together said at least two currents from said position sensitive device;

comparing means for comparing an adding means output with a predetermined threshold value and for generating a comparison output when said addition output exceeds said predetermined threshold value;

light projection control means for generating, at a predetermined time period, a light projection pulse signal whose output lever gradually increases, and for stopping said light projection by said light projecting means when said comparison output is generated; and

position signal detecting means for outputting a position signal for said object on the basis of said at least two output currents of said position sensitive device which are obtained when said light projection is stopped.

5,082,364

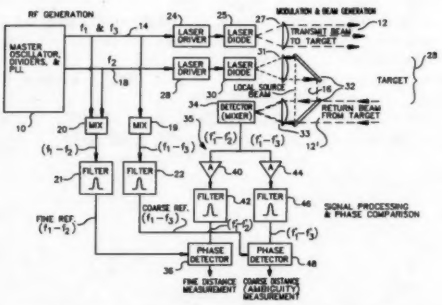
RF MODULATED OPTICAL BEAM DISTANCE MEASURING SYSTEM AND METHOD

James T. Russell, 15305 SE. 48th Dr., Bellevue, Wash. 98006

Filed Aug. 31, 1990, Ser. No. 576,612

Int. Cl.[5] G01C *3/08*

U.S. Cl. 356—5 **20 Claims**



1. An optical distance measurement system comprising:

means for producing a first light beam for transmission over a distance that is to be measured and including means for amplitude modulating the first light beam with a first radio wave frequency, the phase of such first radio frequency amplitude modulation at any given location on the beam being dependent on the transmission distance;

means for producing a second light beam that is not transmitted over such distance, and including means for amplitude modulating the second light beam with a second radio wave frequency functioning as a local signal source;

an electro-optical detecting means for receiving said first and second light beams and functioning as a mixer to cause electro-optical heterodyning of said first and second radio wave frequencies modulated on the first and second light beams respectively, said electro-optical heterodyning producing a resultant difference radio frequency signal representing the phase of said first radio wave frequency after transmission of the first light beam over such distance; and

phase measuring means responsive to said resultant difference radio frequency signal for producing an output signal representing distance.

5,082,365

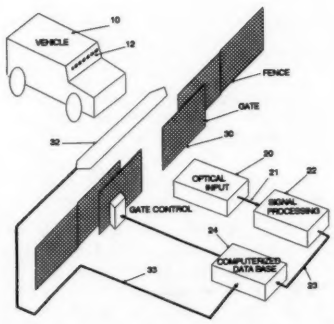
REMOTE IDENTIFICATION AND SPEED DETERMINATION SYSTEM

Kenneth F. Kuzmick, 1001 Blackwood St., Altamonte Springs, Fla. 32701; Robert A. Kuzmick, Rt. 3, 116 Whiskey Creek Rd., Hollywood, Md. 20636, and William J. Davis, 4901 Woodruff Springs Rd., Sanford, Fla. 32771

Filed Dec. 28, 1989, Ser. No. 458,417

Int. Cl.[5] G01P *3/36;* **G01B** *11/00*

U.S. Cl. 356—28 **20 Claims**



1. Apparatus for measuring the speed of an object which includes a known pattern of known size and shape, said apparatus comprising:

means to view a field of view through which said object passes;

means to determine a first point in time when the view of said known pattern, as viewed by said viewing means, appears to be of a first predetermined size;

means to determine a second point in time when the view of said known pattern, as viewed by said viewing means, appears to be of a second predetermined size;

means to determine the amount of time between said first point in time and said second point in time; and

means to calculate the speed of said object which is proportional to said determined amount of time.

5,082,366

APPARATUS AND METHOD FOR DETECTING LEAKS IN PACKAGES

John Tyson, II, Wayne, and John W. Newman, Berwyn, both of Pa., assignors to Laser Technology, Inc., Norristown, Pa.

Filed Aug. 30, 1990, Ser. No. 574,809

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—35.5 **27 Claims**

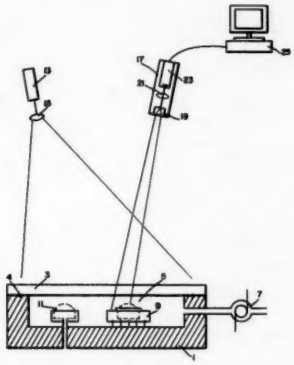
26. A method of inspecting a package for gross leaks, comprising the steps of:

a) placing the package in a chamber,

b) varying the pressure in the chamber by an amount suffi-

cient to deform a surface of the package by a small integral number of wavelengths of light,

c) determining the position of the surface of the package,



d) waiting for an interval of several seconds, and

e) repeating step (c), so as to determine whether the surface has moved during the interval of step (d).

5,082,367

ARRANGEMENT OF PROBES

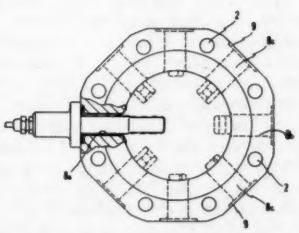
Werner Kohler, Bruhl; Dieter Reinhardt, Walldorf; Hermann Gramlich, HaBloch; Reinhart Schertz, Oftersheim; Karl Weissmann, Oftersheim, and Rainer Trampert, Oftersheim, all of Fed. Rep. of Germany, assignors to Pfaudler-Werke AG, Schwetzingen, Fed. Rep. of Germany

Filed May 26, 1989, Ser. No. 358,691

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1988, 3819026

Int. Cl.[5] G01N *21/00, 27/02*

U.S. Cl. 356—73 **11 Claims**



1. Apparatus for holding a plurality of measuring probes, comprising a housing of generally polygonal shape having a plurality of radially extending mounting openings with planar mounting surfaces surrounding each opening adapted for exchangeably and sealingly mounting said probes, said housing having an inner surface of electrically insulating corrosion resistant material, wherein said housing has eight mounting openings arranged octagonally and wherein said housing has a circular inner shape having a diameter of about 150 millimeters.

5,082,368

HETERODYNE OPTICAL TIME DOMAIN REFLECTOMETER

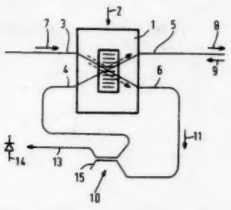
Manfred H. Fuchs, Hamburg; Wolfgang Hoppe, Norderstedt; Friedrich-Karl Beckmann, Pinneberg; Ernst Brinkmeyer, Buchholz, and Wolfgang Brennecke, Hamburg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corp., New York, N.Y.

Continuation of Ser. No. 265,364, Oct. 28, 1988, abandoned. This application Oct. 3, 1990, Ser. No. 599,253

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1987, 3737635

Int. Cl.[5] G01N *21/88*

U.S. Cl. 356—73.1 **23 Claims**



1. A heterodyne optical time domain reflectometer (OTDR) for determining the attenuation behaviour of a monomode waveguide by measurement of the backscattered parts of light pulses transmitted in said waveguide, comprising: an acousto-optic modulator (AOM) which deflects the transmission beam from a laser into the waveguide to be tested at a light frequency which is modulated with the acoustic frequency when the AOM is acoustically energized in a pulse mode, and a fibre coupler superimposing the light pulses backscattered from the test waveguide on a local oscillator beam (LO) constituted by the laser beam which traverses the AOM when the AOM is not energized.

5,082,369

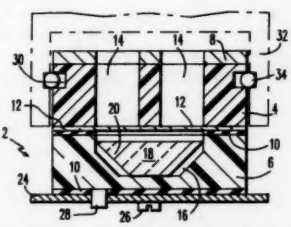
OPTICAL PROBE TEST PORT

Jerry M. Kennon, and Ronald B. Via, both of Wake, N.C., assignors to ABB Power T&D Company, Blue Bell, Pa.

Filed Aug. 24, 1989, Ser. No. 397,825

Int. Cl.[5] G01J *1/02*

U.S. Cl. 356—243 **25 Claims**



1. A device for use in the testing of an optical probe which has at least one optical transmitter/receiver pair composed of one optical transmitter for emitting optical energy along a first path and one optical receiver for receiving optical energy propagated along a second path, said device comprising: a housing formed to be mechanically coupled with the probe and having at least one pair of passages, with each passage extending along a respective one of the first and second paths; and at least one optical energy reflecting means disposed in said housing and positioned relative to said passages of said pair such that, when said housing is coupled to the probe, light propagated along the first path from the transmitter is reflected by said reflecting means into said second path toward the receiver, and wherein the probe has two such transmitter/-

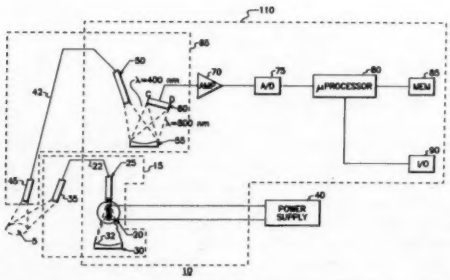
receiver pairs, and said device has two said pairs of passages each associated with the light paths of a respective transmitter/receiver pair and two said reflecting means each positioned relative to a respective pair of passages.

5,082,370

INDUSTRIAL COLORIMETER HAVING LIGHT INTENSITY COMPENSATION MEANS

Thomas A. Fletcher, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 14, 1990, Ser. No. 538,362
Int. Cl.[5] G01J *3/42*
U.S. Cl. 356—328 **18 Claims**



1. Apparatus for determining the acceptability of the color of an object, comprising:

a lighting means for illuminating the object with light;

a sensing means in communication with said lighting means for creating an array of sensed component values representative of the intensity of light reflected from the object; and

a processor having compensation means connected to said lighting means and said sensing means, said processor generating a difference value which is the absolute value of the difference between each of said sensed component values and a product of corresponding stored component values multiplied by an intensity correction factor, said intensity correction factor being equal to the sum of each of said sensed component values divided by a corresponding stored component value, the sum being divided by the number of values.

5,082,371

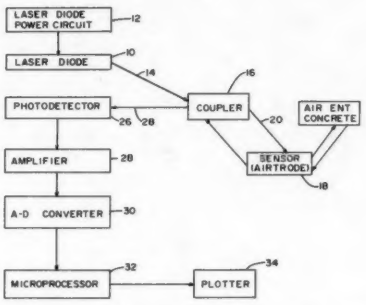
METHOD AND APPARATUS FOR MEASURING ENTRAINED AIR IN CONCRETE

Farhad Ansari, Passaic, N.J., assignor to New Jersey Institute of Technology, Newark, N.Y.

Filed Dec. 28, 1989, Ser. No. 458,285
Int. Cl.[5] G01N *21/49*
U.S. Cl. 356—446 **16 Claims**

1. A device for measuring entrained air in freshly mixed concrete, comprising:

light transmission means for supplying light into said concrete and for receiving said light that is reflected back, said light transmission means including a single optical fiber having a free distal end which is visibly exposed, said distal end having a tip with a sharp angle thereat; and



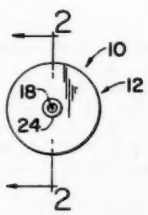
conversion means for converting said received light to an electrical signal corresponding to the intensity of said reflected light.

5,082,372

FLUID MIXING DEVICE

Andrew J. Robinson, Coventry; Carl H. Gerstung, Suffield, and Alexis J. Tournaud, Ashford, all of Conn., assignors to Gas Technology Resources Flotron, Incorporated, South Windsor, Conn.

Filed May 22, 1991, Ser. No. 704,299
Int. Cl.[5] B01F *5/04*
U.S. Cl. 366—167 **15 Claims**



1. A fluid mixing device comprising a mixer housing having an axially elongate fluid mixing chamber including an inlet end and an outlet end, said chamber having a cylindrical sidewall including a central axis and at least one end wall defined by a surface of revolution generated about said central axis, said one end wall forming a contiguous juncture with the inlet end of said cylindrical sidewall, conduit means for introducing into said chamber a plurality of fluids under pressure to be mixed within said chamber and including an inlet conduit extending into and terminating within said chamber and a nozzle at the terminal end of said inlet conduit, said nozzle being disposed within a portion of said chamber defined by said cylindrical sidewall and having at least one outwardly extending discharge passageway communicating with said inlet conduit and terminating at its outer end at a discharge orifice, said one discharge passageway being outwardly inclined relative to said central axis and in the direction of said one end wall for directing fluid under pressure discharge from said nozzle in the general direction of said inlet end, and means defining an outlet orifice at the outlet end of said chamber for egress of mixed fluid from said chamber, said outlet orifice having a cross sectional area greater than the cross sectional area of said one discharge orifice.

5,082,373

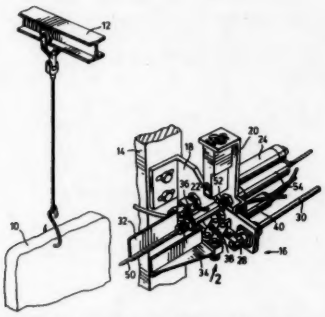
APPARATUS FOR SELECTING, CAPTURING AND PROBING FOOD PRODUCTS

Larry A. Rohde, Mississauga; Mark R. Hall, Lorretto; Edward Kroeger, Toronto, and Joyce E. Sutherland, Brampton, all of Canada, assignors to Canada Packers Inc., Canada

Filed Sep. 27, 1990, Ser. No. 588,721

Int. Cl.[5] G01K *1/14;* B25J *11/00*

U.S. Cl. 374—155 14 Claims



1. Apparatus for capturing, holding and probing a penetrable food product, said apparatus comprising:

a gripper comprising jaws movable in a first direction between a protruded position adjacent a food product to be captured from a conveying means and a retracted position remote from said food product, said jaws also being moveable relative to each other to vary their mutual separation to capture and release said food product when said jaws are in said protruded position;

first gripper actuating means adapted to move the jaws between their protruded position and their retracted position;

second gripper actuating means operable to move the jaws towards and away from one another when said jaws are in said protruded position;

a probe moveable by means independently of said jaws when said jaws are in said protruded position in said first direction between a protruded position to penetrate a food product for sensing temperatures of said food product held between the jaws and a retracted position spaced from said food product; and

probe operating means operable to move the probe between its protruded and its retracted position when the jaws are in said protruded position.

5,082,374

LINEAR GUIDE DEVICE

Hisayoshi Narumiya, Osaka, Japan, assignor to Koyo Seiko Co., Ltd., Osaka, Japan

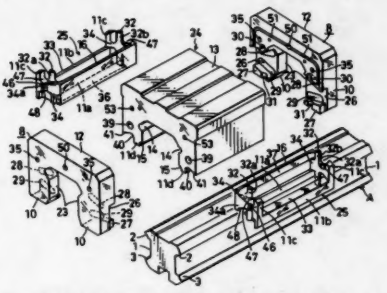
Filed Nov. 1, 1990, Ser. No. 607,806

Claims priority, application Japan, Nov. 9, 1989, 1-291657; May 15, 1990, 2-126333; Jun. 11, 1990, 2-153554; Aug. 6, 1990, 2-83477[U]

Int. Cl.[5] F16C *29/06*

U.S. Cl. 384—45 12 Claims

1. A linear guide device comprising a straight guide rail, and a movable body movable as fitted over the guide rail, the movable body comprising a movable block generally inverted U-shaped in cross section and having a pair of legs at its opposite sides, each of the legs being formed with a ball circulation channel in the form of a loop, and a plurality of balls movable through the channel in circulation and rollable between the movable block and the guide rail, the movable block comprising an end cap at each of its opposite ends and an intermediate member between facing inner surfaces of said end caps as the remaining portion, the ball circulation channel comprising a groovelike forward passage formed by a retainer in one side of the leg of the block intermediate member and facing the guide rail, a borelike return passage formed in the leg outwardly of the forward passage, and reverse passages each formed by fitting a guide member to said inner surface of each of the block end caps and interconnecting the corresponding ends of the forward and return passages, the block intermediate member being divided into a cage generally U-shaped in cross section and a central main portion, the cage including as an integral unit the leg portion on the lower side of the ball circulation channel, the leg portion on the laterally outer side of the return passage, the retainer portion and the guide member portions at the opposite ends of the intermediate member.



5,082,375

COMPOSITE CAGE

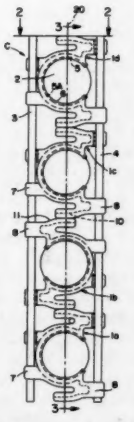
Reinhart Hillmann, Schweinfurt, Fed. Rep. of Germany, assignor to SKF GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Nov. 26, 1990, Ser. No. 617,604

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1989, 8914085[U]

Int. Cl.[5] F16C *33/41*

U.S. Cl. 384—526 12 Claims



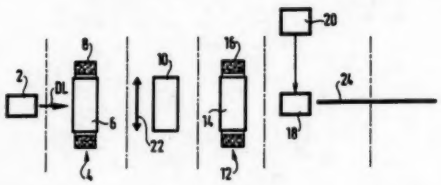
1. Composite cage for rolling bearings, comprising cage segments with pockets to hold the rolling elements, the cage segments being held together by connecting elements, characterized in that the cage segments (**1***a*, **1***b*, **1***c* and **1***d*) have axially outwardly-pointing projections (**7**, **8**) with openings (**9**) to hold the connecting elements (**3**, **4**).

5,082,376

OPTICAL FIBER FEEDER ASSEMBLY INCLUDING AN AMPLIFIER

Jean-Luc Beylat, Paris; Fabrice Pitel, Monthlery, and Michel Monnot, Orsay, all of France, assignors to Alcatel CIT, Paris, France

Filed Mar. 21, 1991, Ser. No. 672,798
Claims priority, application France, Mar. 23, 1990, 90 03755
Int. Cl.[5] G02B 6/26, 6/42
U.S. Cl. 385—3 3 Claims



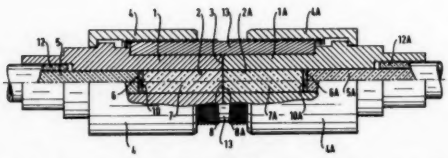
1. An optical fiber feeder assembly including an amplifier, the assembly being implemented in the form of an optical head including an optical isolator (6, 8) that rotates light polarization, the assembly being characterized by the fact that the amplifier it includes is a semiconductor amplifier-modulator (18) that preferentially amplifies light polarized in a direction specific to the amplifier, said direction being aligned parallel to the polarization direction of the light-emitting laser (2) by a rotation compensator (14, 16) that rotates light polarization in the opposite direction.

5,082,377

OPTICAL FIBER CONNECTOR ENDPIECE, A METHOD OF ASSEMBLING IT, AND A METHOD OF CONNECTING TWO OPTICAL FIBERS USING SUCH ENDPIECES

Bertrand Jarret, Osny, and Joël Legrand, Mitry Mory, both of France, assignors to Cegelec, Levallois-Perret, France

Filed Jul. 3, 1990, Ser. No. 547,274
Claims priority, application France, Jul. 3, 1989, 89 08889
Int. Cl.[5] G02B 6/36, 7/26
U.S. Cl. 385—60 7 Claims



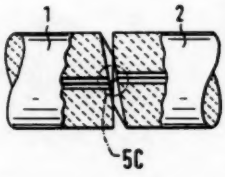
1. In a connector endpiece for interconnecting two optical fibers end-to-end, the endpiece comprising a cylindrical body (1) provided with an axial bore (2) for receiving the end of one of the optical fibers to be connected (5), and having a polished plane front face for fixing in one half of the bore of a hollow connection sleeve (13) face-against-face with an identical connector endpiece housing the end of the other optical fiber (5A), the improvement wherein the endpiece further comprises an optical element (7) of material having the same refractive index as that of the optical fibers to be interconnected, having a plane rear face (9) and having a polished front face (8; 11), said element being disposed in the front portion of the bore of the endpiece in such a manner that the rear face of the element is in contact with the front end (6) of the corresponding optical fiber, and the front end of the element is flush with the polished plane front face (3) of the endpiece, a layer (10) of adhesive material having the same refractive index as the optical fibers to be interconnected being disposed between the front face of the optical fiber and the rear face of the optical fiber element.

5,082,378

OPTICAL FIBER CONNECTOR AND METHOD FOR ITS MANUFACTURE

Emmerich Müller, Finkenweg, and Michael Fleischer-Reumann, Marderweg, both of Fed. Rep. of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 16, 1990, Ser. No. 568,098
Claims priority, application European Pat. Off., Sep. 27, 1989, 89117799.0
Int. Cl.[5] G02B 6/38
U.S. Cl. 385—72 10 Claims



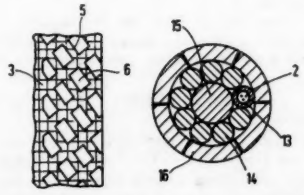
1. An optical fiber connector for joining an optical fiber to an optical fiber in an opposing connector, comprising a ferrule and an optical fiber surrounded by the ferrule, with the end face of the fiber being inclined with respect to a plane which is perpendicular to the longitudinal axis of the fiber and produced by a rotating polishing tool whose axis of rotation is inclined to said axis of said fiber, the ferrule having an end face comprising a portion projecting over the end face of the fiber in the direction of the fiber axis, but not being arranged in the same plane as the fiber end face, with the projecting portion forming a bearing surface for said opposing connector such that he two connectors can be brought into contact with each other and the opposing fiber end faces have a distance from each other when the connectors are in contact.

5,082,379

ELECTRICAL OVERHEAD CABLE ROPE COMPRISING AN INTEGRATED OPTICAL COMMUNICATION LEAD

Helmut Lindner, Cologne; Norbert Wenzel, Bergisch-Galdbach; Robert Herff, Cologne, and Hans-Joachim Schmitz, Kerpen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corp., New York, N.Y.

Filed Jan. 2, 1991, Ser. No. 638,277
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1990, 4000605
Int. Cl.[5] G02B 6/44
U.S. Cl. 385—101 13 Claims



1. An electrical overhead cable rope comprising an integrated optical communication lead (13), in which metallic wire elements (14, 15, 16) surround a tube (1) of noble steel, in which at least one optical waveguide (2) is contained, wherein the tube (1) of noble steel has applied to it a water-tight coating establishing a continuous electrically conducting connection between the tube of noble steel and the wire elements (14, 15, 16) surrounding this tube.

5,082,380

OPTICAL FIBRE CABLE

Ralph Sutehall, Abertillery, and Andrew Summers, Newport, both of Wales, assignors to Northern Telecom Europe Limited, London, England

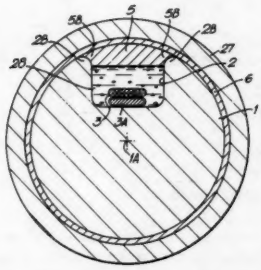
Filed Jun. 27, 1990, Ser. No. 544,678

Claims priority, application United Kingdom, Jul. 1, 1989, 8915177

The portion of the term of this patent subsequent to Aug. 22, 2006, has been disclaimed.

Int. Cl.[5] G02B *6/44*

U.S. Cl. 385—114 10 Claims



1. An optical fibre cable consisting of a non-electrically conductive core having a longitudinal channel within which a self-supporting ribbon optical fibre element is disposed, and a non-optical ribbon element of similar tensile modulus to the optical fibre element disposed in the channel and extending alongside and in abutment with the optical fibre element, both elements adopting together an undulating configuration within the channel along the length of the cable so that an excess length of optical ribbon element is evenly distributed along the cable.

5,082,381

PRINTER FOR MONOCHROME AND COLOR PRINTING

Kozo Kishida; Hiromi Shishiuchi, and Takao Mimura, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

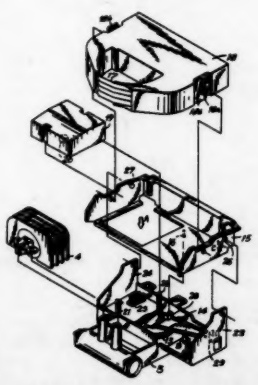
Continuation of Ser. No. 45,005, Apr. 30, 1987, Pat. No. 4,867,587. This application Jul. 13, 1989, Ser. No. 379,319

Claims priority, application Japan, Apr. 30, 1986, 61-100169; May 20, 1986, 61-115629

The portion of the term of this patent subsequent to Sep. 19, 2006, has been disclaimed.

Int. Cl.[5] B41J *35/10*

U.S. Cl. 400—216 48 Claims



1. A printer adaptable for printing with a monochrome printing ribbon cartridge which is kept in a fixed vertical position during printing or a multi-color printed ribbon cartridge which is moved vertically during printing, the printer comprising:

a printer body;

printing ribbon cartridge holder means supported on the printer body for removably receiving a monochrome or a multicolor printing ribbon cartridge;

transmission means supported on the printer body and coupled to the cartridge holder means for positioning and moving a cartridge held in the cartridge holder means for printing:

selection means for selecting a first monochrome printing mode in which a monochrome printing ribbon cartridge is kept in a fixed vertical position during printing when a monochrome ribbon cartridge is mounted on the holder means and a second multi-color printing mode in which the multi-color printing ribbon cartridge is moved vertically during printing when a multi-color ribbon cartridge is mounted on the holder means;

adjustable control signal means on the printer body for providing a first control signal at a predetermined level to establish an initial position of the printing ribbon cartridge holder means;

setting means for adjusting the control signal from the adjustable control signal means includes a semi-fixed resistor which provides an output that is a first analog voltage; converter means for converting the first analog voltage into a first digital signal; register means having the first digital signal as an input; and drive input signal means for providing a drive input signal;

drive means responsive to the first control signal to position the cartridge holder means, selectively mountable on the printer, selectively engageable with the transmission means, for supplying power to the transmission means to selectively position the cartridge holder means, the transmission means positioning the cartridge holder means for monochrome printing when the drive means is not present, and, when the drive means is present, for one of monochrome and multi-color printing; and

comparing means for comparing the first digital signal in the register means with the drive input signal to provide a signal for operating the drive means.

5,082,382

SHEET GUIDE MECHANISM FOR USE IN AN IMAGING DEVICE

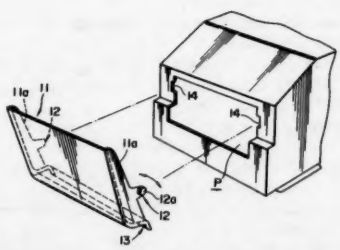
Ikuo Negoro, Sakado; Kiyoshi Negishi, Tsurugashima, and Masahiro Kita, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 385,367, Jul. 27, 1989, abandoned. This application Jan. 30, 1991, Ser. No. 649,295

Claims priority, application Japan, Jul. 29, 1988, 63-189866; Jun. 16, 1989, 1-153747

Int. Cl.[5] B41J *15/00*

U.S. Cl. 400—613.2 8 Claims



1. A sheet guide mechanism for an imaging device which employs a continuous form having a plurality of transverse

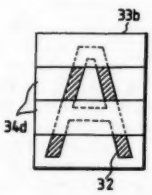
perforations at predetermined intervals of length along a longitudinal direction of said continuous form so as to divide said continuous form into a plurality of sheets, comprising a plate member that is vertically arranged at an outlet side of said imaging device to upwardly guide said continuous form that is discharged from said device, said continuous form passing over a top edge of said plate member so that the weight of said continuous paper causes said continuous form to be bent downward, causing said continuous form to be folded into a predetermined arrangement that is defined by the placement of said transverse perforations, which further comprises an install member including a first connect member provided on said plate member and a second connect member provided on said sheet guide mechanism which are adapted to be brought into and out of engagement with each other.

5,082,383

METHOD OF ERASING PRINTING OF THERMAL TRANSFER PRINTER

Yuki Ohishi, Tamayama, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1990, Ser. No. 499,101
Claims priority, application Japan, Jun. 23, 1989, 1-161810
Int. Cl.[5] B41J *29/26*
U.S. Cl. 400—695 **3 Claims**



1. A method of removing ink from an erasure area on a print medium using a thermal transfer printer, the printer comprising a thermal head disposed to reciprocate along a path adjacent the print medium and an ink ribbon disposed between the thermal head and the print medium, said path being parallel to letter space movement of said thermal head, said thermal head also being disposed to press said ink ribbon against said print medium, said erasure area having a width parallel to the path, said method comprising:

(a) dividing the erasure area into a plurality of parallel elongated areas, each elongated area having a length equal to the width of the erasure area and being substantially parallel to the path;

(b) grouping said elongated areas into at least two groups, any two elongated areas of one of said at least two groups being separated by at least one elongated area of another of said at least two groups;

(c) pressing the ink ribbon against the erasure area by means of the thermal head;

(d) melting the ink disposed in said elongated areas of one and only one of said at least two groups such that the ink is fused to the ink ribbon;

(e) peeling the ink ribbon away from the print medium such that the fused ink disposed in said elongated areas of said one of said at least two groups is progressively removed from said print medium beginning at common first ends of said lengths and ending at common second ends of said lengths; and

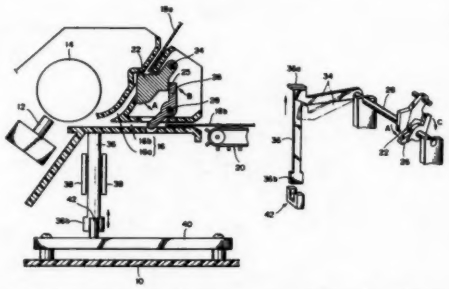
(f) repeating steps c) through e) for a number of times equal to the number of said at least two groups minus one so that each of said at least two groups will be erased.

5,082,384

PAPER DETECTING APPARATUS FOR PRINTER

Kazuhiro Kakaguchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 15, 1990, Ser. No. 614,171
Claims priority, application Japan, Nov. 20, 1989, 1-301017
Int. Cl.[5] B41J *29/42*
U.S. Cl. 400—708 **4 Claims**



1. A paper detecting apparatus for a printer for detecting paper which passes a paper transport path, comprising:

paper detecting means provided in such a manner as to extend into said paper transport path and adapted to be pushed to pivot by paper which passes said paper transport path;

motion converting and transmitting means for converting pivotal motion of said paper detecting means into linear motion and transmitting said linear motion to a remote location; and

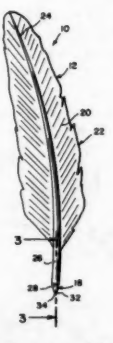
means for converting the motion transmitted by said motion converting and transmitting means into an electric signal.

5,082,385

BALLPOINT FEATHER PEN

Prince Stewart, 1270 Graymont Dr. SW., Atlanta, Ga. 30310, and George Spector, 233 Broadway RM 3815, New York, N.Y. 10007

Filed Sep. 21, 1990, Ser. No. 586,282
Int. Cl.[5] A45D *40/20*; B43K *23/00*
U.S. Cl. 401—88 **1 Claim**



1. A ballpoint feather pen comprising:

a) a feather large enough to be gripped comfortably by a hand of a person; and

b) a ballpoint pen dispenser carried in the bottom of said feather, so that the combination of said ballpoint pen dispenser and said feather can be used by the person for writing; wherein said feather includes a tapering hollow shaft that terminates at one end into a quill which is a hollow, stemlike main shaft of said feather; wherein said

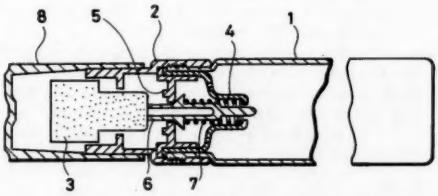
ballpoint pen dispenser includes a head with an ink cartridge extending from the head, said ink cartridge extends with said hollow quill in surrounding relationship with the head of the dispenser abutting the other end of the quill and said head including a writing point carrying a small ballbearing therein, so that when the ink cartridge is mounted within said quill the small ballbearing in the writing point will transfer ink stored in the ink cartridge onto a writing surface; further including a finger grip clamp being a downwardly tapered contoured sleeve having a longitudinal split on one side and a small clip on an opposite side, whereby said clamp is mounted onto the quill of said feather adjacent to the head of said ballpoint pen dispenser to better hold the ink cartridge within the quill and allows for a better grip of said ballpoint feather pen, while the clip can be used for attachment to a garment.

5,082,386

PAPER ADHESIVE APPLICATOR WITH ADHESIVE HAVING PH INDICATOR

Bungo Hironaka, and Fumitaka Yoshioka, both of Nabari, Japan, assignors to Okitsumo Incorporated, Nabari, Japan

Filed Jan. 12, 1990, Ser. No. 464,100
Claims priority, application Japan, Jan. 13, 1989, 1-7086
Int. Cl.[5] B43K *8/02*
U.S. Cl. 401—206 **2 Claims**



1. A paper adhesive/applicator combination comprising as the adhesive an aqueous emulsion of a water-insoluble, tacky acrylic resin packaged in a container/applicator therefor, wherein said aqueous emulsion when applied to a paper forms a film of said acrylic resin having a cohesive force equal to or greater than the strength of said paper is formed within 15 seconds, wherein said container/applicator is a felt pen type having a porous applicator tip, a finger-grippable reservoir filled with said emulsion, and valving means associated with said applicator tip and said reservoir, said valving means being normally biased in a closed position and openable in response to the application of pressure against said applicator tip to establish a flow path between said reservoir and said applicator tip, wherein said aqueous emulsion has a solids content from 10 to 50% by weight, a viscosity of less than 600 cp at 20° C., a basic pH, and contains 0.01 to 2% by weight of the emulsion of a pH indicator whose basic pH color turns colorless in the neutral and acidic pH range, and wherein said aqueous emulsion is produced by emulsion polymerizing a mixture of 30–60 parts by weight of n-butyl acrylate, 30–60 parts by weight of 2-ethylhexyl acrylate, 0–20 parts by weight of vinyl acetate and 0.2–10 parts by weight of acrylic acid.

5,082,387

PIVOT JOINT ASSEMBLY

Kevin B. DeVries, Plymouth, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Mar. 12, 1991, Ser. No. 667,908
Int. Cl.[5] F16C *11/00*
U.S. Cl. 403—146 **9 Claims**

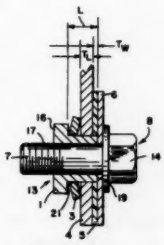
1. A pivot joint assembly for a rotary lever, comprising:

a foundation;

a spacer extending from said foundation along an axial direction and including a cylindrical ferrule extending between a first end and a second end along a length in said axial direction, said ferrule being of an outer diameter at its second end;

a rotary lever having a thickness along said axial direction and a length extending radially from said axial direction, said lever having a through bore in said axial direction, said bore being of a diameter to fit over said outer diameter of the ferrule in a sliding fit;

a belleville spring having an outside diameter, a bore of an inside diameter, a thickness, and an uncompressed cone height, with a ratio of uncompressed cone height to thickness being between 1.4 and 1.8, said bore inside diameter being of a size to fit over said outer diameter of the ferrule in a sliding fit;



means for fastening said spacer to said foundation with said second end of said ferrule distal to said foundation and said first end proximal to said foundation; and

means for securing said lever and said belleville spring on said ferrule with said ferrule extending through the bores of said lever and spring so that said securing means exerts a force against the second end of the ferrule;

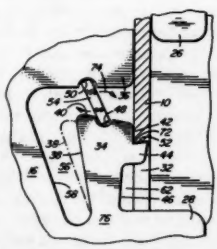
wherein when the assembly is assembled with said spring and lever received on said ferrule and said securing means exerting a force against the second end of the ferrule, the belleville spring is compressed by an amount equal to at least 50% of the uncompressed cone height of said belleville spring.

5,082,388

LOCKING TAB FOR HOOK-IN TYPE SHELVING

Achim Lauterbach, Surrey, Canada, assignor to E-Z-Rect Manufacturing Ltd., North Vancouver, Canada

Filed Feb. 22, 1991, Ser. No. 659,267
Int. Cl.[5] B25G *3/00*
U.S. Cl. 403—254 **2 Claims**



1. Apparatus for securing a hooked member to a post after engagement of said hooked member with said post, said hooked member having vertically aligned upper and lower hooks, said apparatus comprising:

(a) a deformable locking tab formed atop said lower hook, beneath a recessed web portion of said hooked member, said locking tab having top, rear and front edges;

(b) a locking arm projecting forwardly from said front edge;

(c) a first notch cut in said top edge; and,

(d) a second notch cut in said recessed web portion, adjacent said first notch;

wherein:

(i) said locking arm projects forwardly from a central portion of said front edge, leaving upper and lower portions of said front edge extending respectively above and below said locking arm;

(ii) said front edge upper portion projects forwardly of said front edge lower portion; and,

(iii) said post is slotted to receive said hooks, said slots comprising tapered apertures with narrow openings in an outer face of said post and wider openings in an opposed inner face of said post.

5,082,389

CONNECTOR WITH A SPRING-BIASED CLOSURE MEMBER

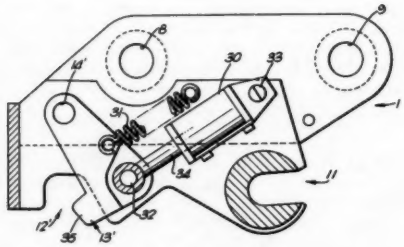
William J. Balemi, 15 Sunderland Road, Bucklands Beach, Auckland, New Zealand

Filed Mar. 7, 1988, Ser. No. 165,171

Claims priority, application New Zealand, Jun. 4, 1987, 220557; Dec. 10, 1987, 222864

Int. Cl.[5] E04F *3/28*

U.S. Cl. 403—322 **17 Claims**



1. A connector comprising a body, first connection means enabling said body to be mounted on a carrying device, second connection means to enable an implement to be engaged with said body, said second connection means comprising spaced apart first and second recesses on said body, the respective connection means being mutually oriented for mounting the connector on the carrying device with said first recess being substantially downwardly opening and said second recess opening in a direction substantially at right angles to the direction of opening of said first recess, at least said first recess having an entrance and being substantially closeable by a closure member so that a part of the implement enters said first recess prior to closure of said first recess by said closure member, a fluid pressure operated piston and cylinder assembly for moving said closure member towards a closing position wherein said closure member substantially covers the entrance to said first recess when fluid pressure is applied to said piston and cylinder assembly for retaining said part of said implement in said recess, and biasing means for moving said closure member towards an open position wherein said first recess is substantially open when fluid pressure is released from said piston and cylinder assembly for removal of said part of said implement from said first recess thereafter.

5,082,390

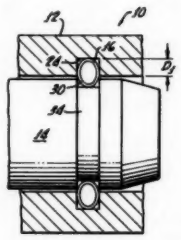
LATCHING, HOLDING AND LOCKING SPRING APPARATUS

Peter J. Balsells, P.O. Box 15092, Santa Ana, Calif. 92705, assignor to Peter J. Balsells and Joan C. Balsells, Santa Ana, Calif.

Filed Jan. 22, 1991, Ser. No. 643,505

Int. Cl.[5] B25G *3/18*

U.S. Cl. 403—326 **18 Claims**



1. Locking mechanism comprising:

a garter-type canted-coil spring having elliptical coils with a coil height and a coil with measured, respectively, along a minor and a major axis of the elliptical coils;

a first member including means defining a first groove for retaining the spring, said first groove having a depth less than the coil width in order that a portion of each coil extends outwardly from the first groove;

a second member including means defining a second groove for accepting the extended portion of each coil and for loading the coils generally along the major axis thereof, said first and second members being locked to one another when the coils are disposed within and loaded by the first and second grooves.

5,082,391

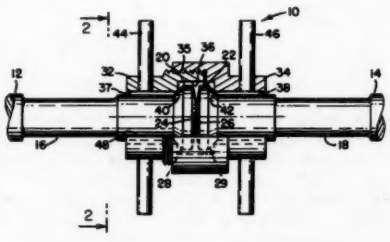
SELF-ALIGNING QUICK DISCONNECT COUPLING

William F. Florida, Fresno, Calif., assignor to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 611,221, Nov. 9, 1990, abandoned. This application Sep. 3, 1991, Ser. No. 752,984

Int. Cl.[5] F16B *7/18*

U.S. Cl. 403—342 **3 Claims**



1. A self-aligning quick connect and disconnect coupling, comprising:

a pair of rods each having a small diameter portion, an intermediate diameter portion, and a pair of large diameter heads in the shape of a spherical sector and having an intermediate portion in the form of a frustum of a cone; and

means defining a pair of longitudinally slotted coupling halves threaded together with abutments thereon to engage said heads and retain said heads in said coupling halves and each longitudinally slotted coupling half cooperating to define a rod receiving bore slightly larger than

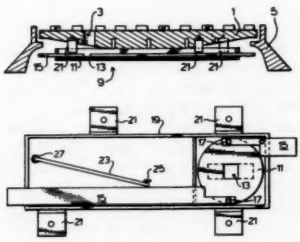
the diameter of said rods and a head receiving bore slightly larger than said large diameter heads for accommodating said large diameter heads of said pair of rods, said longitudinally slotted coupling halves being removable from said pair of rods when unscrewed and moved into axial alignment with said small diameter portions of said pair of rods.

5,082,392

MANHOLE COVER LOCK WITH SPRING BIASED LOCKING BARS

Tony Marchese, 315 Ojibway Trail, Mississauga, Ontario, Canada L4Z 3A2 ; Jim Houghton, 59 Crown Crescent, Bradford, Ontario, Canada L3Z 2M4 ; Dick Launspach, R R #8, 36 Victoria Cres, Mono Mills, Orangeville, Ontario, Canada L9W 3T5 , and Domenic Marchese, 5 Manswood Cres, Brampton, Ontario, Canada L6T 3Y7

Filed Mar. 27, 1991, Ser. No. 675,680
Int. Cl.[5] E01C *29/14;* B65D *55/14*
U.S. Cl. 404—25 **6 Claims**



1. A locking manhole cover and key combination, said manhole cover having a lock to the underside thereof and a vent hole through said manhole cover, said lock comprising a plurality of locking bars spring biased by spring means pushing said locking bars outwardly to a locking position, a rotatable actuator accessible through said vent hole for moving said locking bars to an unlocking position with said key being fittable through said vent hole to operate said actuator, and wherein said key includes a first shaft portion turnable in said vent hole for rotating said actuator and pulling said locking bars to the unlocking position and a second shaft portion which locks against turning in said vent hole thereby preventing rotation of said actuator and holding said spring biased locking bars away from said locking position.

5,082,393

METHOD FOR FORMING ROAD AND GROUND CONSTRUCTIONS

Björn Ringesten, Box 113, Örkelljunga, Sweden S-286 01 ; Olay Berge, P1 3003, Särö , Sweden S-430 40 , and Leif Berntsson, Tågmästaregatan 10, Göteborg, Sweden S-416 52

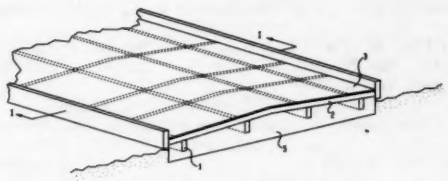
PCT No. PCT/SE87/00264, § 371 Date Nov. 16, 1989, § 102(e) Date Nov. 16, 1989, PCT Pub. No. WO88/09412, PCT Pub. Date Dec. 1, 1988
PCT Filed May 29, 1987, Ser. No. 435,448
Int. Cl.[5] E01C *3/00*
U.S. Cl. 404—28 **13 Claims**

1. A method for forming load-bearing road and ground constructions on ground having a low load-bearing capacity comprising the steps of:

excavating earthen mass from said ground to form a ground bed,

positioning a plurality of rigid foundation elements having a first average bulk density in edgewise fashion on said ground bed, each of said foundation elements positioned on a corresponding portion of said ground bed, each one of said plurality of foundation elements separated from an adjacent one of said plurality of foundation elements by a predetermined space and including a plurality of longitudinal and transverse beam members arranged to form a beam grid, a low bulk density material disposed between said beam members and a slab-like member disposed above said beam grid, and

depositing a material having a second average bulk density greater than said first average bulk density over said plurality of positioned foundation elements wherein said



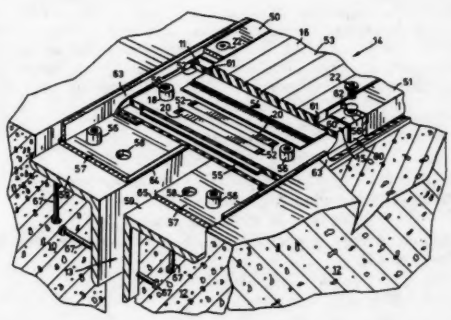
deposited material fills said predetermined spaces to join adjacent ones of said foundation elements and wherein said deposited material forms a wearing layer above said plurality of foundation elements, wherein the combination of said first and second bulk densities provides a total weight substantially equal to the total weight of a portion of said earthen mass excavated to form said corresponding portion of said ground bed.

5,082,394

EXPANSION JOINT SEALS AND METHODS AND APPARATUS FOR MAKING AND INSTALLING THE SAME

Joseph D. George, 1263 Royal York Road, Islington, Ontario, Canada M9A 4C4

Filed May 2, 1990, Ser. No. 517,671
Claims priority, application Canada, May 4, 1989, 598907
Int. Cl.[5] E01C *11/02, 11/08*
U.S. Cl. 404—68 **37 Claims**



1. An expansion joint seal comprising an elongated strip of elastomer material with opposed side marginal portions each adapted to be secured in place with respect to spaced apart members between which there is a gap adapted to be bridge by said seal, said strip being formed with a series of spaced apart transversely extending openings each having an upper margin and a lower margin, a plurality of load-bearing members, said openings receiving said load-bearing members in such a manner that said load-bearing members may slide within said openings, said load-bearing members being of sufficient length that in use, said load-bearing members extend across said strip to the extent that the ends of said load-bearing members overlie said spaced apart members, and at least first and second layers of one-way fabric disposed within said elastomer material, one of said layers being located adjacent said upper margin and the other of said layers being located adjacent said lower margin

positioned for engagement with said load bearing members while sliding said one-way fabric having cords therein substantially all of which run in the same direction, said direction being substantially parallel to said side marginal portions, whereby said cords do not inhibit expansion of said strip as said gap widens.

5,082,395

MOTOR-DRIVEN ROLLERS

Adolf G. Gustafson, Musseronvägen 8, S-141 46, Huddinge, Sweden

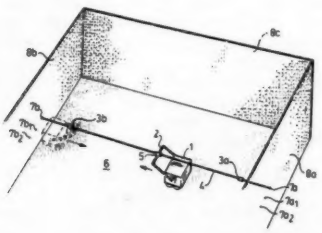
PCT No. PCT/SE89/00269, § 371 Date Nov. 26, 1990, § 102(e) Date Nov. 26, 1990, PCT Pub. No. WO89/11563, PCT Pub. Date Nov. 30, 1989

PCT Filed May 17, 1989, Ser. No. 613,590

Claims priority, application Sweden, May 18, 1988, 8801861

Int. Cl.[5] E01B *19/28, 19/22*

U.S. Cl. 404—103 **6 Claims**



1. An arrangement in a motor-driven roller (**1**) designed with two driving directions, with a yoke (**2**) for guiding the direction of movement of the roller **1**), comprising a steering device (**5**) disposed on the yoke (**2**) and operative continually to steer the direction of movement of the roller (**1**); said steering device (**5**) being located ahead of the roller (**1**), as seen in the direction of movement of the roller (**1**); and said steering device (**5**) for the roller (**1**) includes a continually operative steering arrangement for guiding the roller so as to constantly determine the direction of movement of the roller (**1**) and, at the end of the desired movement in one movement direction, to switch the driving direction, said steering arrangement (**3**, **4**) being switchably disposed in relation to that surface (**6**) which is intended to be rolled by means of the motor-driven roller (**1**).

5,082,396

VIBRATORY ROLLER

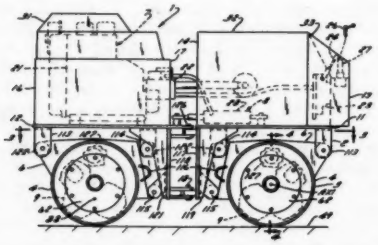
Manfred Polacek, Munich, Fed. Rep. of Germany, assignor to Wacker Corporation, Menomonee Falls, Wis.

Filed Oct. 24, 1990, Ser. No. 602,669

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1989, 3940653

Int. Cl.[5] E01C *19/38, 19/26*

U.S. Cl. 404—117 **17 Claims**



13. A vibratory roller for compacting base materials comprising:

a frame means having a longitudinal centerline vertical plane, a front subframe having a front end and an inner end, and a rear subframe having a rear end and an inner end;

a center pivot means connecting said inner ends of said subframes together in facing relation for articulation relative to each other;

steering means for causing said subframes to articulate about said center pivot to a selectable degree to steer said roller vibrator;

front and rear roller drum carriers having front and rear axle axes, respectively, extending transversely to said vertical plane;

a suspension means for mounting said front and rear roller drum carriers on said front and rear subframes, respectively, said suspension means including outer and inner mounts on each of said roller drum carriers lying in said vertical plane, said inner mounts each including an upper and a lower inner connection to said inner ends of said subframes lying in said vertical plane, and said outer mounts including front and rear connections with said front and rear ends of said subframes lying in said vertical plane;

a roller drum means mounted on each of said roller drum carriers for rotation about said respective axle axis;

a prime mover mounted on said roller vibrator to rotate said roller drum means to move said roller vibrator; and

an exciter means mounted on said vibratory roller for applying a directional compacting force to at least one of said roller drums at least one of said roller drum carriers includes a lower exciter support located below said axle axis and between said axle axis and said base material when said vibratory roller is in a normal operating position; and

said exciter means has a stationary center of mass, said exciter means mounted on said lower exciter support to place said exciter center of mass below axle axis to locate the center of gravity of said roller vibrator as close as possible to said base material when in a normal operating position.

5,082,397

METHOD OF AND APPARATUS FOR CONTROLLING FLUID LEAKAGE THROUGH SOIL

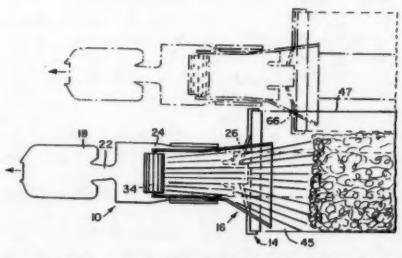
Avi Raviv, Rehovot, Israel, assignor to Solmat Systems, Ltd., Yavne, Israel

Continuation of Ser. No. 866,715, Jul. 14, 1986, Pat. No. 4,786,208, which is a continuation of Ser. No. 730,257, May 6, 1985, Pat. No. 4,636,112, which is a continuation of Ser. No. 367,886, Apr. 13, 1982, abandoned. This application Jul. 12, 1988, Ser. No. 217,860

The portion of the term of this patent subsequent to Nov. 22, 2005, has been disclaimed.

Int. Cl.[5] B02B *3/16;* **F16L** *1/028*

U.S. Cl. 405—176 **17 Claims**



1. A method for controlling leakage through soil or other granular material in a region comprising the steps of:

(a) passing over the region with a vehicle having a scraper blade for scraping and removing soil therefrom;

(b) sequentially passing over a portion of the region with the

vehicle and laying a strip of impermeable sheet material on the ground during each pass such that the vehicle avoids traveling directly on the sheet material on the ground;

(c) depositing soil on the strip such that the latter is covered with soil substantially uniformly deep on the strip except along one edge, the other edge of the strip overlying the uncovered edge of the adjacent previously laid down strip thereby establishing a first layer of overlapping strips of sheet material covered with soil.

5,082,398

SYSTEM OF VEGETATION STRIPS FOR PROTECTION OF SLOPES AGAINST EROSION

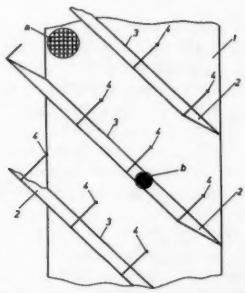
Franc Subic, Tretnikova 56, 61000 Ljubljana, Yugoslavia

Filed Feb. 28, 1990, Ser. No. 486,505

Claims priority, application Yugoslavia, Mar. 6, 1989, 469/89

Int. Cl.[5] E02B *3/04*

U.S. Cl. 405—258 **2 Claims**



1. A system for protection of slopes against erosion, comprising:

a base wire netting having a longitudinal axis along a major length thereof; and

a plurality of wire netting strips each having upper and lower edges, said lower edges being fixed along a surface of said base wire netting, said upper edges being connected through a plurality of wires to points along said surface of said base wire netting, and said wire netting strips being oriented slantwise along a length thereof at an angle ranging between 20° and 40° relative to said longitudinal axis of said base wire netting to thereby form a plurality of channels.

5,082,399

MINE ROOF ANCHOR HAVING ADJUSTABLE RESIN RETAINING WASHER AND EXPANSION SHELL ASSEMBLY WITH FRICTION REDUCING MEANS

Jerry E. Frease, Lexington, Ky.; John C. Stankus, Canonsburg, Pa.; Eugene H. Stewart, Pittsburgh, Pa., and Glen S. Grissinger, Hollidaysburg, Pa., assignors to Jennmar Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 389,620, Aug. 3, 1989, abandoned, which is a continuation of Ser. No. 229,699, Aug. 8, 1988, Pat. No. 4,865,489. This application May 4, 1990, Ser. No. 519,010

Int. Cl.[5] E21D *20/02*

U.S. Cl. 405—259.6 **12 Claims**

1. A roof anchor for supporting an underground mine roof or the like comprising:

an elongated shaft having first and second end portions, said shaft operable to be positioned in a bore hole in a mine roof, said bore hole having an open end portion at said mine roof and a blind closed end portion in the strata above said mine roof;

said shaft first end portion having an expansion shell assembly positioned thereon, mechanical expansion shell assembly including a tapered plug threaded onto said shaft first end portion, and an expansion shell having at least two leaves, each leaf having an inner surface and an outer surface, said tapered plug having a plurality of sloped outer surfaces abutting said inner surfaces of aid expansion shell;

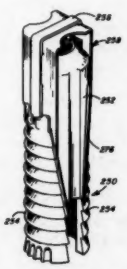
a plastic-like friction reducing means positioned between said sloped outer surfaces of the plug and said inner surfaces of the leaves, said friction reducing means having sufficient rigidity so that at least a portion of said friction reducing means remains between said sloped outer surfaces of said plug and said inner surfaces of said leaves during the expansion of said expansion shell into engagement with the inner wall of said bore hole;

said shaft first end portion with said expansion shell assembly positioned thereon arranged to be inserted into said bore hole formed in said roof;

a preselected volume of a resin bonding material positioned in said bore hole in capsule form above said shaft front end portion, said resin bonding material arranged to bond said shaft first end portion to the inner wall of the bore hole;

said shaft second end portion having means cooperating therewith operable to bear against said mine roof at said open end portion and an enlarged end portion arranged to rotate said shaft in said bore hole;

annular stop means engaged to said elongated shaft at a preselected location along said shaft so that said annular stop means, upon insertion of said shaft first end portion with said expansion shell assembly positioned thereon into said bore hole, exerts a compressive force on said preselected volume of said resin bonding material positioned thereabove in said bore hole before said resin bonding material has set and maintains a compressive force on said bonding material;



said expansion shell assembly, upon rotation of said shaft in said bore hole, arranged to exert a further compressive force on at least a portion of said resin bonding material before said resin bonding material has set and expands said expansion shell to engage the inner wall of said bore hole and provide a tension on said roof anchor shaft; and

said compressive force and said further compressive force maintained on said resin bonding material until said resin bonding material has set.

8. A method of supporting an underground mine roof or the like comprising:

forming a blind bore hole upwardly in a mine roof, said blind bore hole having a wall and a closed blind end portion in the strata above the mine roof;

inserting into said blind bore hole a preselected volume of resin bonding material contained in an unmixed condition within a destructible resin capsule with components of said resin bonding material being confined within separate compartments of said capsule;

providing a roof anchor which includes a shaft with first and second end portions, an annular stop means on said shaft at a point intermediate between said first and second end portions, a bolt head on said second end portion and a mechanical expansion shell assembly having an expansion shell having at least two leaves surrounding a tapered plug

threaded onto said shaft first end portion, and a plastic-like friction reducing means located between said tapered plug and said leaves having sufficient rigidity so that at least a portion of said friction reducing means remains between said sloped outer surface of said plug and said inner surface of said leaves;

securing said annular stop means on said roof anchor shaft at a preselected location on said shaft between said first and second end portions to provide a volume of space between said stop means on said shaft and said closed blind end portion of said bore hole that is not occupied by said roof anchor and expansion shell assembly and is less than the volume of said resin bonding material;

inserting aid roof anchor first end portion in said blind bore hole and moving said first end portion upwardly in said blind bore hole toward said closed blind end portion;

fracturing said resin capsule and said separate compartments therein with said roof anchor shaft first end portion and urging said roof anchor upwardly in said bore hole and compressing said resin by said annular stop means before said resin hardens;

rotating said roof anchor to mix said components of said resin bonding material within said bore hole while compressing said resin and expanding said expansion shell into contact with the inner wall of said bore hole to further compress said resin while maintaining at least a portion of said friction reducing means between the surface of said plug and the inner surfaces of said leaves; and

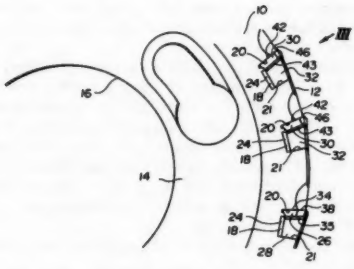
permitting said resin to set while being compressed by said annular stop means and said expansion shell assembly with said bolt head formed on the second end portion of said roof anchor shaft supporting a roof support plate surrounding said bore hole and abutting said mine roof.

5,082,400

INSERT ROTARY CUTTER

Hidehisa Shiratori, and Masaaki Nakayama, both of Tokyo, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Oct. 23, 1989, Ser. No. 425,032
Claims priority, application Japan, Oct. 25, 1988, 63-268547
Int. Cl.[5] B26D *1/12*
U.S. Cl. 407—42 **6 Claims**



1. An insert rotary cutter comprising:

a cutter body having an axis of rotation therethrough and having a forward end portion; and

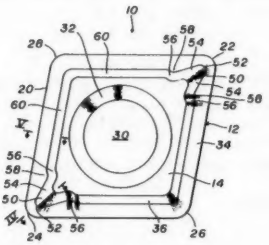
at least one first cutter insert having a main cutting edge and an end cutting edge and at least one second cutter insert for cutting off burrs having a main cutting edge and an end cutting edge releasably mounted at said forward end portion of said cutter body, each said second cutter insert being disposed so that said main cutting edge forms an angle of less than 90° with said end cutting edge so as to have a negative corner angle and said end cutting edge thereof is displaced radially inwardly and axially forwardly of said cutter body, with respect to said end cutting edge of said first cutter insert.

5,082,401

CUTTING INSERT FOR LIGHT FEED RATE

Kenneth L. Niebauer, Raleigh, N.C., assignor to Kennametal Inc., Latrobe, Pa.

Filed Dec. 18, 1990, Ser. No. 629,736
Int. Cl.[5] B23B *27/22*
U.S. Cl. 407—114 **10 Claims**



1. An indexable cutting insert comprising:

(a) a generally polygonal insert body having a top face, a bottom face and a plurality of side walls extending therebetween with the juncture of each side wall and the top face defining a peripheral cutting edge, said polygonal insert body further including at least one radiused corner portion connecting two adjacent cutting edges, said corner portion and the adjacent area normally being engaged with the workpiece during a cutting operation in which a chip is removed from the workpiece; and

(b) a chip-breaking groove formed in the top face of the insert body and extending alongside the cutting edges, said chip-breaking groove including a descending wall which inclines downwardly from the cutting edges to a rearward edge and a back wall which inclines upwardly from the rearward edge of the descending wall, said back wall including a nose portion adjacent the corner portions of the insert having a tip and a pair of side edges which are disposed at an angle relative to the adjacent cutting edges of the insert body such that the width of the chip groove increases as it extends away from its respective corner, and wherein the angle of inclination of the back wall relative to the top face of the insert body increases as the back wall extends away from its respective corner whereby said insert may be utilized in finishing operations through a wide range of depth of cut relative to the feed rate.

5,082,402

METHOD OF DRILLING OF THROUGH-HOLES IN PRINTED CIRCUIT BOARD PANELS

Morio Gaku, and Hidenori Kimbara, both of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Co. Ltd., Tokyo, Japan

Filed Jul. 29, 1991, Ser. No. 737,234
Claims priority, application Japan, Aug. 8, 1990, 1-208239
Int. Cl.[5] B23B *35/00*
U.S. Cl. 408—1 R **5 Claims**

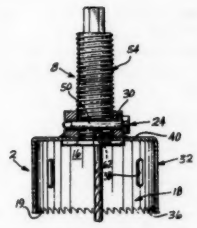
1. A method of drilling a through-hole in a printed circuit board panel, which comprises placing a water-soluble lubricant sheet on one surface or each of two surfaces of a printed circuit board panel and drilling a through-hole through the printed circuit board panel, the water-soluble lubricant sheet being composed of a mixture of 20 to 90% by weight of a polyethylene glycol having a weight average molecular weight of not less than 10,000 with 10 to 80% by weight of a water-soluble lubricant and having a thickness of 0.05 to 3 mm.

5,082,403

CORE-DRILLING APPARATUS WITH MANDREL DRIVER-EJECTOR

James L. Sutton, 1610 Bay St., and Stephen H. Van Valkenburg, 2887 Hoover Ave. S.E., both of Port Orchard, Wash. 98366

Continuation of Ser. No. 248,169, Sep. 23, 1988, abandoned. This application Apr. 22, 1991, Ser. No. 689,133
Int. Cl.[5] B23B 51/04
U.S. Cl. 408—68 13 Claims



1. In a core drilling apparatus to be equipped with a pilot drill in use,

a mandrel body which is elongated and has opposed ends with one of said ends adapted to be rotatably coupled to a rotary drive means and a longitudinally extending externally threaded portion intermediate said distal ends and the other of said distal ends defining a driver surface and means for securing said pilot drill to said other end so that the pilot drill projects from said driver surface,

a core drill body having an axis of rotation and opposed ends and a hole therethrough which is centered on the axis of rotation and opening at said opposing ends of the drill body, a first portion of the hole opening at one of said ends and having internal threads, and a second portion of the hole opening at the other of said ends of the drill body, a circular cutting edge provided at said other end about said other end opening, said second portion having a diameter which is radially enlarged relative to the first portion to enable the second portion of the hole to receive a core of work material cut by the cutting edge,

the externally threaded portion of the mandrel body being threaded into the internally threaded first portion of the hole,

latch means for providing a positive rotatable coupling between the bodies of the mandrel and the core drill for performing a cutting operation, and alternatively, releasing the positive rotatable coupling for permitting threaded movement of the mandrel body in the core drill body for ejection of the cut core from the hole, said latch means including a first and second abutment means each having a coupling surface extending along parallels to a plane coinciding with the longitudinal axis of the mandrel body, between points spaced apart from one another in the plane axially of the mandrel body, and an abutment surface extending in a plane transverse the longitudinal axis of the mandrel body at a point operatively offset from the coupling surface of the respective first or second abutment means axially of the mandrel body,

means for rotatably coupling and axially fixing the first abutment means to one of the mandrel body and the core drill body,

means mounting the second abutment means on the other of said mandrel body and said core drill body for axial movement on said other body between a first position in which the respective coupling surfaces and abutment surfaces of the first and second abutment means are aligned with one another and abutted with one another respectively, in planes coinciding with and transverse the axis of the mandrel body, respectively, and a second position in which the respective abutment surfaces of the first and second abutment means are operatively disengaged and spaced apart from one another axially of said other body, and

means whereby the coupling surfaces of the first and second abutment means are interengageable with one another when the second abutment means are moved axially on said other body to the first position thereof, to positively couple the bodies of the mandrel and the core drill, and the respective first and second abutment means, for rotation in unison with one another about the longitudinal axis of the mandrel body for the cutting operation, and alternatively, disengageable from one another when the second abutment means are moved axially on said other body to the second position thereof, to permit the mandrel body to be threadedly moved in the core drill body for the ejection operation,

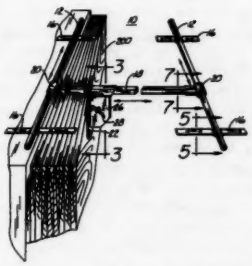
the driver surface being recessed in the second portion of the hole, relative to said other end of the core drill body, when the second abutment means are in the first position thereof, and the length of said threaded portion and the distance between said first and second positions of the second abutment means being of sufficient lengths to enable the mandrel body to be threadedly moved in the core drill body to an ejection position in which the driver surface is substantially coplanar with a plane defined by said cutting edge when the second abutment means are moved axially on said other body to the second position thereof.

5,082,404

VEHICLE CARGO CLAMP

Peter V. Stewart, 204 Washington Grove La., Gaithersburg, Md. 20877, and David R. Butts, 6916 Tennyson Ter., Rockville, Md. 20850

Filed Jun. 29, 1990, Ser. No. 546,263
Int. Cl.[5] B60P 7/06
U.S. Cl. 410—127 8 Claims



2. A cargo securing system for a vehicle having a pair of opposite walls, said system comprising:

a track which extends between said pair of opposite walls, and

a clamping device attachable to and selectively slidably movable along said track for securing cargo, said clamping device comprising:

(a) a first side plate having an opening therethrough,

(b) a second side plate having an opening therethrough substantially aligned with said opening in said first side plate,

(c) a cargo brace member secured to at least one of said side plates for contacting said cargo and preventing the movement thereof,

(d) a hinge means integrally connected to said first side plate and to said second side plate for pivotally attaching said first side plate to said second side plate for pivotal motion between a open position wherein said clamping device may be selectively slid along said track and a closed position wherein said first and second plates clamp said track to prevent said clamping device from moving with respect to said track,

(e) means for providing said pivotal motion extending through said openings in said plates, whereby moving

said means for providing said pivotal motion causes said plates to move between said open and closed positions, and

(f) means attached to said means for providing said pivotal motion to facilitate the moving of said means for providing said pivotal motion.

5,082,405

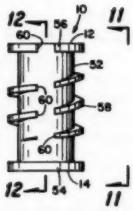
POTTED INSERT FOR HONEYCOMB PANELS

Donald W. Witten, P.O. Box 508, Collinsville, Okla. 74021

Continuation-in-part of Ser. No. 406,563, Sep. 13, 1989, Pat. No. 4,941,785. This application Jul. 6, 1990, Ser. No. 549,100

Int. Cl.[5] F16B *39/02*

U.S. Cl. 411—82 **3 Claims**



1. An insert for use in attachment of a threaded member, such as a bolt or the like, to a panel, such as a honeycomb panel, such as by use of an epoxy adhesive, the insert comprising:

a unitary elongated metallic member having a generally cylindrical external surface and an outer end and an inner end, and having on the external cylindrical surface at said outer end a first integral, enlarged diameter annular collar portion and having at said inner end a second integral enlarged diameter annular collar portion, and having on the external cylindrical surface an integral externally extending spiraled thread portion, the thread portion extending from adjacent said second collar portion to adjacent said first collar portion, and having in a plane of the cylindrical axis at least one notch formed in said second integral collar portion and aligned notches formed in said integral thread portion, each notch being of relatively narrow width and having substantially parallel side walls and extending in depth to at least substantially said cylindrical external surface, and having an internally threaded recess therein coaxial with said member cylindrical external surface and extending from said inner end to adjacent said outer end.

5,082,406

SELF LOCKING PANEL FASTENER WITH DEVICE FOR VISUALLY INDICATING WHETHER FASTENER IS LOCKED

Frank J. Cosenza, Santa Barbara, Calif., assignor to VSI Corporation, Chantilly, Va.

Filed Jun. 29, 1990, Ser. No. 545,808

Int. Cl.[5] F16B *39/00*

U.S. Cl. 411—105 **12 Claims**

1. In a fastener for securing together a pair of panels wherein each of the panels has an aperture therethrough, the combination of:

a receptacle connected to one of the panels and having an internally threaded nut portion;

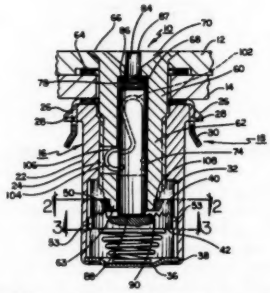
a stud extendible through the apertures of the panels and having an externally threaded portion and a head portion, said stud being rotatable relative to said nut portion to turn the threaded portion into said nut portion to secure said stud to said nut portion, said stud becoming disconnected from said nut in response to relative counterrotation between said stud and said nut, said stud having a shaped end portion and a bore formed therein;

a first locking member within said receptacle, said first locking member having a shaped aperture therein sized to receive said shaped end portion of said stud to drivingly connect said first locking member and said stud, said stud being separable from said first locking member;

a second locking member mounted within said receptacle for generally axial movement relative to said nut portion;

means for locking said second locking member against counterrotation, said second locking member being engageable with said first locking member to form a locking connection between said stud and said second locking member to allow said second locking member to positively lock said stud against said counterrotation;

biasing means in said receptacle for urging said second locking member into locking engagement with said first locking member; and



means for driving said second locking member generally axially relative to said first locking member against the force of the biasing means to break said locking connection to allow counterrotation of said stud relative to said nut portion to allow unscrewing of the threaded portion of said stud from the nut portion, said driving means having a first position within said bore when said stud is engaged with said receptacle and a second position when said stud is disengaged from said receptacle, the difference between said first and second positions of said driving means being such that an observer can ascertain from viewing the head portion of said stud, whether the stud is engaged with said receptacle.

5,082,407

FASTENER RETAINER

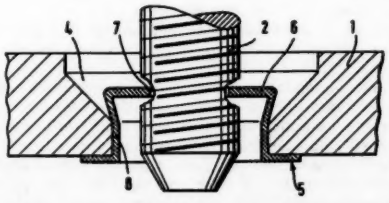
Josef Mickiewicz, Farchant, Fed. Rep. of Germany, assignor to Marker Deutschland GmbH, Eschenlohe, Fed. Rep. of Germany

Filed Apr. 17, 1990, Ser. No. 510,163

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1989, 8905417[U]

Int. Cl.[5] F16B *39/00*

U.S. Cl. 411—107 **8 Claims**



1. A system for securing a fastener in a hole therefor in an assembly to be connected to a base component so that a portion of said fastener's lower end retractably extends from said hole, said system comprising fastener retainer means at least a part of which is held within said hole, said means retentively engaging

said fastener within said hole, and said means possessing axial elasticity sufficient to allow the lower end portion of the fastener to move into said hole when said lower end portion of the fastener is forced toward said hole and to cause the fastener to emerge therefrom when the force is removed and said fastener retainer means engages the threads of the fastener to provide the retentive engagement.

5,082,408

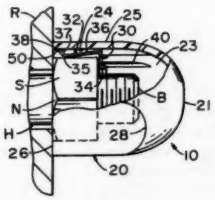
Patent Not Issued For This Number

5,082,409

VEHICULAR LUG NUT COVER AND CLIP

Donald R. Bias, Columbia Station, Ohio, assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 26, 1990, Ser. No. 603,421
Int. Cl.[5] F16B *37/14*
U.S. Cl. 411—431 **28 Claims**



23. A clip adapted for inserting a predetermined depth into a dome-shaped lug nut cover, said clip adapted for removably installing said dome-shaped cover over a threaded bolt and lug nut combination for mounting a wheel rim on a vehicle, said clip comprising:

an annular ring having a central aperture for accommodating a section of the threaded bolt extending outwardly beyond the lug nut secured on said bolt; and

a plurality of downwardly extending projections, each projection being flanged to flare inwardly from the annular ring before terminating in an outwardly flaring end region, each projection adapted for frictionally engaging with an inner wall of the lug nut cover adjacent said projection when the clip is inserted into said cover, and with a flat side of the lug nut adjacent said projection when the clip and dome-shaped cover are installed over said bolt and lug nut.

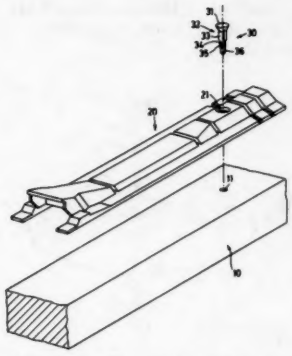
5,082,410

SYSTEM FOR MOUNTING GUIDE RIDGE ON CROSS-COUNTRY SKI

Marc Provence, Thorens les Glieres, France, assignor to Salomon S. A., Chavanod, France

Filed May 18, 1990, Ser. No. 525,109
Claims priority, application France, May 18, 1989, 89 06883
Int. Cl.[5] F16B *15/06*; A63C *5/06*
U.S. Cl. 411—455 **18 Claims**

1. System for mounting a first element (**20**) to a second element (**10**), allowing for a relative displacement between said first and second elements in a predetermined direction (**25**), said system comprising a pin (**30**) composed of a shaft (**32**), adapted to penetrate said first element through a hole (**21**) provided for this purpose and to be anchored by an anchoring zone (**35**) in a corresponding hole (**11**) in said second element (**10**) and of a head (**31**) located opposite said anchoring zone and designed to hold said first element mounted to said second element, said pin (**30**) having over at least one portion of its shaft (**32**) a zone of flexion (**33**) having a transverse section



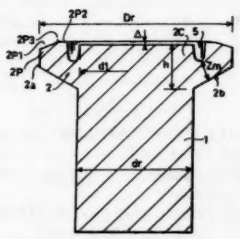
with a reduced moment of inertia in relation to an axis transverse to the direction (**25**) of said relative displacement.

5,082,411

FASTENING MEANS SUCH AS A RIVET, ASSEMBLY PROCESS AND ASSEMBLY OBTAINED

Jean-Marc Auriol, and Philippe Bornes, both of Flourens, France, assignors to Ste. Ateliers de la Haute Garronne Ets Auriol Cie, Balma, France

PCT No. PCT/FR89/00373, § 371 Date Jan. 22, 1991, § 102(e) Date Jan. 22, 1991, PCT Pub. No. WO90/01121, PCT Pub. Date Feb. 8, 1990
PCT Filed Jul. 12, 1989, Ser. No. 640,384
Claims priority, application France, Jul. 22, 1988, 88 10040
Int. Cl.[5] F16B *19/06*; B21D *39/00*
U.S. Cl. 411—506 **14 Claims**



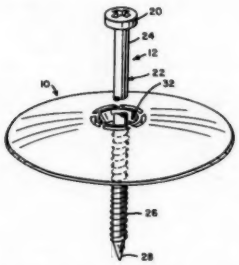
1. A fastener for the production of assemblies including an axial shank (**1**) for placement in a hole in the materials to be assembled, and a head (**2**) situated at an end of said shank for deformation by flattening during installation, said head comprising a front face having an annular groove (**5**) formed therein and extending around the axis of said axial shank, said annular groove being positioned on said front face in proximity to the alignment of the exterior surface of the shank (**1**) and defining on the head two portions, a central portion and a peripheral portion (**2P**), for deformation independently under the effect of flattening.

5,082,412

ROOFING WASHER

Louis Thomas, Maywood, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Dec. 3, 1990, Ser. No. 621,314
Int. Cl.[5] F16B *33/00, 43/00*
U.S. Cl. 411—533 **24 Claims**



1. A roofing washer useful with a fastener having a head and a shank, comprising:

a central portion molded from a resilient, polymeric material;

a central socket defined within said central portion and having a lower wall and a lateral wall, and defining a longitudinal axis, said lower wall having an axial aperture configured so as to permit said shank of said fastener to extend through said axial aperture but not to permit said head of said fastener to pass through said axial aperture, said lateral wall defining an annular lip constituting means for engaging said head of said fastener when said fastener is driven with said shank of said fastener extending through said axial aperture, for being expanded radially as said head of said fastener is driven past said annular lip, and for restraining said head of said fastener, after said head of said fastener has been driven past said annular lip, so as to limit backward movement of said fastener relative to said washer; and

a plurality of discrete cavities arranged within a regular pattern around said central socket and spaced radially outwardly from said central socket by means of said annular lip, said discrete cavities being separated from each other by means of non-radially extending ribs which interconnect said annular lip to said central portion for facilitating radial expansion of said annular lip by accommodating portions of said annular lip, as said head of said fastener is driven past said annular lip with said shank of said fastener extending through said axial aperture, said annular lip being reinforced by said ribs defined between said cavities.

5,082,413

BALE CARRYING APPARATUS

Clifford C. Grosz, 122 ½ 8th St., Harvey, N. Dak. 58341, and Jeffrey Schilling, Martin, N. Dak., assignors to Clifford C. Grosz, Harvey, N. Dak.

Filed Feb. 27, 1990, Ser. No. 486,058
Int. Cl.[5] A01D *90/12*
U.S. Cl. 414—24.5 **13 Claims**

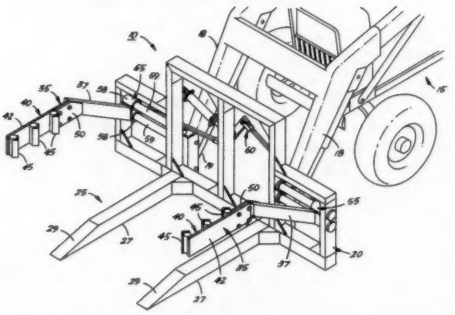
1. A bale handling device for attachment to a front end loader having first and second forwardly extending lifting arms, said bale handling device comprising:

(a) a support frame for attachment to the front end loader, said support frame including connection means for interconnecting said support frame to the lifting arms;

(b) forwardly extending support means for supporting single round bales, said support means being interconnected with said support frame and extending forwardly therefrom, wherein forwardly extending means extending away from the front end loader and rearwardly extending means extending toward the front end loader when said frame is interconnected therewith;

(c) first and second forwardly extending gripping arms, said gripping arms spaced apart to receive a bale therebetween, said gripping arms being slidably interconnected with said support frame; and

(d) manipulation means for manipulating said slidable gripping arms, said manipulation means being constructed and arranged to selectively manipulate said slidable gripping



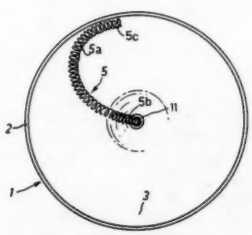
arms such that said gripping arms can cooperate to grip the bale therebetween; wherein said manipulation means include a hydraulic actuator fixed to the support frame, and a linkage connecting the actuator to the gripping arms, such that actuating the actuator causes the gripping arms to be mutually slidably displaced to vary the distance between the gripping arms; and wherein each of the gripping arms are fixed to a cylindrical bearing, the cylindrical bearing being mounted on a shaft fixed to the support frame for linear movement thereon.

5,082,414

HELICOIDAL DEVICE FOR EXTRACTING MATERIAL IN PARTICLE FORM FROM A RESERVOIR

Jean-Paul Taupin, Moulin du Vivier, 58130 Urzy, France

PCT No. PCT/FR88/00101, § 371 Date Nov. 30, 1989, § 102(e) Date Nov. 30, 1989, PCT Pub. No. WO89/08067, PCT Pub. Date Sep. 8, 1989
PCT Filed Feb. 23, 1988, Ser. No. 465,063
Int. Cl.[5] B65G *65/40*
U.S. Cl. 414—306 **11 Claims**



1. An extractor for removing particulate material from the bottom area of a particulate material reservoir including a peripheral wall, the extractor comprising:

a helicoidal wound flexible rod section being coiled along a substantially longitudinal axis having proximal and distal ends, and disposed so as to lie upon and extend along a bottom area of a particulate material receptacle;

drive means for driving the wound rod section in rotation about its axis of coiling connected to the proximal end only of the wound rod section;

said wound rod section otherwise being unsupported, with the distal end of the wound rod section disposed adjacent a peripheral wall of the receptacle;

means for driving the wound rod section to cause sweeping motion of the wound rod section in a direction parallel to and along said bottom area, and to cause the distal end of the wound rod section to traverse the peripheral wall of the receptacle.

5,082,415

FORK LIFT STYLE LOADING APPARATUS

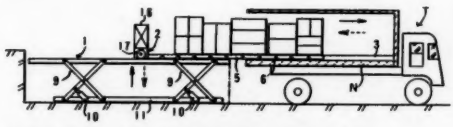
Takeshi Hayashi, No. 85-3, Mitsuicho, Bezaiten, Muya-Cho, Naruto-Shi, Tokushima, Japan

Filed Aug. 4, 1989, Ser. No. 389,898

Claims priority, application Japan, Aug. 4, 1988, 63-195340

Int. Cl.[5] B65G *69/24;* B66P *7/08*

U.S. Cl. 414—343 **6 Claims**



4. Fork lift style loading apparatus comprising:

a platform lift having a horizontally disposed upper surface extending in a longitudinal direction, and elevating means for raising and lowering said upper surface;

a fork lift body disposed on the upper surface of said platform lift and having at least one fork extending longitudinally of the upper surface of said platform lift, said at least one fork being movable back and forth longitudinally of the upper surface of said platform lift to extend and retract said at least one fork from said upper surface,

each of said at least one fork including an elevator fork, raising and lowering means operatively connected to said elevator fork for raising and lowering said elevator fork over small intervals relative to the upper surface of said platform lift, and wheels in rolling engagement with said platform lift so as to rollingly support the at least one fork as the at least one fork is moved back and forth longitudinally of the upper surface of said platform lift, and;

driving means for moving each said at least one fork back and forth longitudinally of the upper surface of said platform lift, said driving means including sprocket shafts extending horizontally and transversely of said at least one fork, sprockets mounted on said sprocket shafts so as to rotate therewith, an endless chain trained around said sprocket and having upper and lower runs extending parallel to said at least one fork with the upper run disposed below and adjacent to said at least one fork, and a driving piece connected to said endless chain and engaging said at least one fork, whereby when said sprockets are rotated, the endless chain is driven and said at least one fork is moved longitudinally of the upper surface of the platform lift owing to the engagement thereof by said driving piece.

5,082,416

METHOD OF PICKING UP AND DEPOSITING A HOLLOW RECEPTACLE SUCH AS A BIN, CONTAINER OR THE LIKE BY AND ON, RESPECTIVELY, A VEHICLE WITH CHANGE GEAR MECHANISM; CHANGE GEAR MECHANISM FOR CARRYING OUT THE METHOD; AND RECEPTACLE DESIGNED FOR USE IN SUCH METHOD

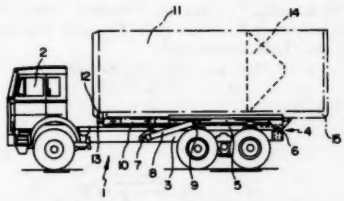
Normann Bock, Syke-Barrien, Fed. Rep. of Germany, assignor to Edelhoff M.S.T.S. GmbH, Iserlohn, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 221,254, filed as PCT/DE87/00472, Oct. 21, 1987, abandoned. This application Aug. 24, 1990, Ser. No. 574,535

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1986, 3636037

Int. Cl.[5] B60P *1/64;* B65G *65/23*

U.S. Cl. 414—492 **13 Claims**



6. Change gear mechanism for picking up and depositing a hollow receptacle on a vehicle having said change gear mechanism comprising

a tilting frame pivoted in a back on an undercarriage of the vehicle;

a tilting cylinder for moving said tilting frame and supported on the undercarriage;

a coulisse on said tilting frame; said coulisse being displaceable on the tilting frame by an associated actuating element and equipped with a stop element capable of being engaged with an associated fitting on the receptacle;

said actuating element for the coulisse having at least one operating cylinder having a floating position, and said operating cylinder capable of being shifted into the floating position by an operable arrangement;

said operable arrangement comprising a pressure medium feed conduit associated with the operating cylinder, said feed conduit having a bypass; and

a shutoff element capable of being actuated in order to put said bypass into service.

5,082,417

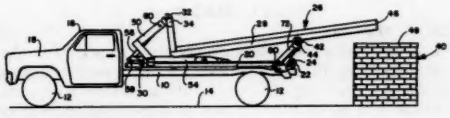
ACCESSORY FOR A VEHICLE HAVING A HYDRAULIC LOADER

James Vlaanderen, Garner, Iowa, assignor to Stellar Industries, Inc., Garner, Iowa

Filed Jul. 9, 1990, Ser. No. 549,901

Int. Cl.[5] B60P *1/28*

U.S. Cl. 414—498 **9 Claims**



1. A vehicle comprising:

a vehicle frame including a bed;

ground engaging means associated with said frame for providing for travel over underlying terrain;

a pair of spaced first rollers journaled to said frame for rotation about a fixed axis adjacent one end of the bed;

a swingable, powered, load engaging element mounted on

said frame for movement between a lowered traveling position adjacent an end of the bed remote said one end and elevated loading or unloading positions located adjacent said bed one end;

a pair of spaced second rollers journaled for rotation about a movable axis generally parallel to said fixed axis; and

means for selectively shifting said second rollers and said movable axis above or below said bed one end

whereby said bed may be conventionally loaded or unloaded using only said first rollers; and

whereby said bed may be loaded from or unloaded to a position above said bed by shifting said second rollers above said bed one end.

5,082,418

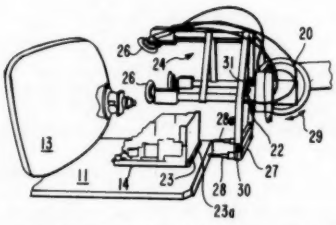
SYSTEM FOR AUTOMATICALLY LOADING AND UNLOADING ARTICLES COUPLED BY CABLING

Christopher J. Poux, Trenton, and Donald P. Sinkus, Hamilton Square, both of N.J., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Mar. 26, 1990, Ser. No. 498,799

Int. Cl.[5] B25J *15/06*

U.S. Cl. 414—736 **4 Claims**



1. Apparatus for transferring a kinescope and a chassis attached by cabling from one location to another location, said chassis having a back panel and pickup apertures arranged at a preselected spacing in said panel, said apparatus including a robot driven pickup member comprising:

a plurality of pickup probes spaced at said preselected spacing for engaging said pickup apertures and moving said chassis;

a frame, said probes pivotably coupled to said frame, said frame having means for picking up said kinescope as said probes engage said apertures; and

means for supporting and simultaneously rotating said frame in orthogonal directions.

5,082,419

PROCESS FOR THE INPUT AND CARRYING AWAY OF SMOKING OR COOKING RODS FOR AUTOMATIC SUSPENSION OF A PLURALITY OF SAUSAGES

Günter Kollross, Gross Gerau-Dornheim, and Fritz K. Steinbis, Gross Gerau, both of Fed. Rep. of Germany, assignors to Gunter Kollross, Fed. Rep. of Germany

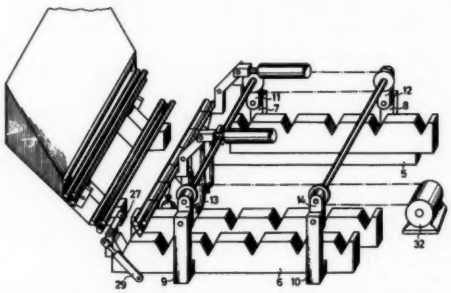
Filed Sep. 17, 1990, Ser. No. 583,552

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1989, 3930876

Int. Cl.[5] B65G *25/02*

U.S. Cl. 414—786 **7 Claims**

1. A process for the inputting and carrying away of smoking rods or cooking rods to and from a loading station at which one rod at a time is tightly chucked at one end and is supported alternately at at least two points at some spacing from one another on the rod for the automatic suspension of a number of sausages on loops connected thereto, characterized by the steps of first bringing the rods out of a storage area individually and then bringing each individual rod one after the other into a readiness position, engaging and supporting the rod in the readiness position from below between the two ends of the rod in a horizontal setting, feeding this rod by an essentially horizontal transverse movement in a direction to the loading station, loading the rod with sausages at the loading station, supporting the loaded rod at the loading station at both ends, feeding the loaded rod by at least one more essentially horizontal transverse movement in the same direction to a holding position, and collecting at one or more subsequent holding positions one or more loaded rods to be transferred onto a smoking or cooking wagon.



5,082,420

METHOD FOR FORMING A BLENDED CUBE OF BRICK

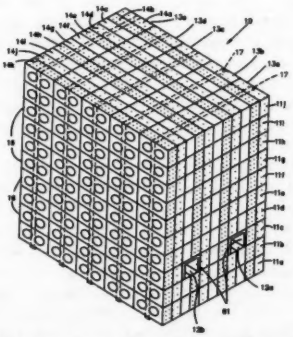
Joseph H. Patrick, Jr., Greenwood, S.C., assignor to Pearne & Lacy Machine CO., Inc., Siler City, N.C.

Division of Ser. No. 167,873, Mar. 14, 1988, Pat. No. 4,938,361.

This application May 7, 1990, Ser. No. 519,797

Int. Cl.[5] B65G *57/28*

U.S. Cl. 414—786 **10 Claims**



1. A method of blending brick and producing a cube of brick having a plurality of panels of vertically aligned columns of aligned and abutting brick and in which said panels each comprise a majority of brick of similar color and texture, comprising removing entire layers of fired brick from a stack in which they are fired, maintaining said layers in groups, and producing said cube with each of most of said panels respectively assembled from brick contained in a single respective stack layer.

5,082,421

ACTIVE CONTROL OF UNSTEADY MOTION PHENOMENA IN TURBOMACHINERY

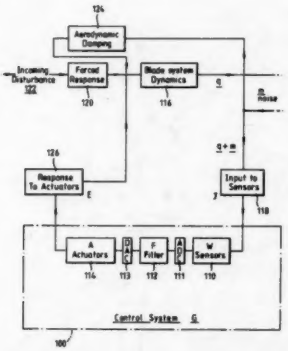
Elizabeth Acton, Cambridge; Alexander M. Cargill, Derby; Colin F. Ross, and Graham P. Eatwell, both of Cambridge, all of England, assignors to Rolls-Royce plc, London, England

Division of Ser. No. 511,726, Apr. 20, 1990, Pat. No. 5,005,353, which is a division of Ser. No. 187,169, Apr. 28, 1988, Pat. No. 4,967,550, which is a continuation-in-part of Ser. No. 36,770, Apr. 9, 1987, abandoned. This application Feb. 7, 1990, Ser. No. 651,968

Claims priority, application United Kingdom, Apr. 28, 1986, 8610297; Apr. 28, 1987, 8710071

Int. Cl.[5] F04D *27/02*

U.S. Cl. 415—118 19 Claims



1. In a turbomachine, a control system for actively controlling the dynamics of at least one mode of at least one unsteady motion phenomenon associated with the blading of said turbomachine, said control system having a control bandwidth which is at least partly coextensive with the bandwidth of said unsteady motion phenomenon and comprising:

(a) an array of sensors located in said turbomachine in predetermined relationship to said unsteady motion phenomenon for continuously producing from each of said sensors sensor signals related to said unsteady motion phenomenon;

(b) signal processing means connected to receive said sensor signals from each of said sensors and having at least one channel for continuously processing said sensor signals and continuously outputting control signals; and

(c) actuator means located in said turbomachine in predetermined relationship to said unsteady motion phenomenon, said actuator means being adapted to be continuously driven by said control signals;

wherein said signal processing means comprises:

(i) means for summing sensor signals from each of said sensors in predetermined combinations thereof and weighting said sums to obtain signals representing at least one independent measure of said at least one mode in said at least one channel; and

(ii) means for modifying said signals representing said at least one independent measure in said at least one channel to obtain said control signals in controlled phase and amplitude relationship to said at least one mode, said actuator means thereby producing outputs effective to change said dynamics of said at least one mode so as to minimize the physical effects of said dynamics on said turbomachine,

said signal processing means and at least one other part of said control system being disposed for rotation relative to each other, said one other part of said control system being selected from said sensor means and said actuator means, said rotation being tied to rotation of rotary parts of said turbomachine, said signal processing means incorporating heterodyning means for fixing the frame of reference of the signal processing means relative to the frame of reference of said at least one other part of the system.

5,082,422

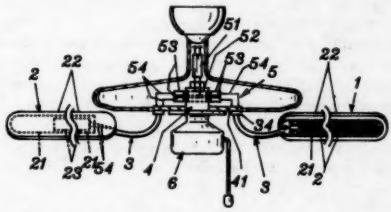
ILLUMINATIVE FAN

Sui-Mu Wang, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (10477), Taiwan

Filed Jun. 10, 1991, Ser. No. 712,502

Int. Cl.[5] F21V *33/00*

U.S. Cl. 416—5 1 Claim



1. An illuminative fan comprising:

a plurality of fan blades radially secured to a motor shaft of a driving motor rotatably driven by said driving motor; each said fan blade having a plurality of illuminators mounted in said blade electrically connected to a power supply means and operatively lit by said power supply means, whereby upon a rotation of said fan blades, said illuminators once being lit will be rotated for producing decorative illuminating effect for the fan;

each said fan blade mounted with an illuminator board thereon, said illuminator board including said plurality of illuminators fixed in a plurality of sockets formed as a matrix array having a plurality of columns and rows juxtapositionally interlacedly disposed on a substrate board engageably fixed in a shallow recess of the fan blade, and an illuminating controller electrically connected with the power supply means for controlling the lighting of the illuminators.

5,082,423

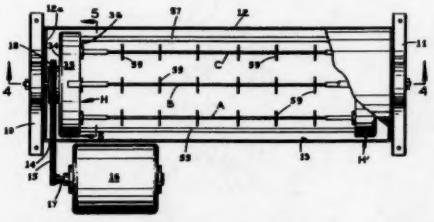
PADDLEWHEEL APPARATUS

Bruce S. Morgan, Embassy Park, 3188 Lake Shore Dr., Pembroke Park, Fla. 33009

Filed Jul. 9, 1990, Ser. No. 549,952

Int. Cl.[5] B63H *1/10*

U.S. Cl. 416—111 16 Claims



1. A paddlewheel apparatus comprising:

first and second fixed supports spaced apart along a predetermined axis;

first and second sun gears respectively supported from said first and second supports on said axis and held against rotation;

first and second holders rotatable on said axis and extending

around said first and second sun gears respectively, said holders being interconnected to rotate in unison;

a drive member driveably connected to said first holder on the outside and rotatable in unison with said first holder;

a first set of additional gears forming a first epicyclic gear train with said first sun gear and rotatably mounted within said first holder, said first set of additional gears including planet gears spaced apart circumferentially around said first sun gear;

a second set of additional gears forming a second epicyclic gear train with said second sun gear and rotatably mounted within said second holder, said second set of additional gears including second planet gears spaced apart circumferentially around said second sun gear;

and a plurality of paddles located between said holders and each coupled at its opposite ends to a corresponding planet gear of aid first epicyclic gear train and to a corresponding planet gear of said second epicyclic gear train, each of said paddles hanging down substantially vertically and being unobstructed between said holders in all rotational positions of said holder.

5,082,424

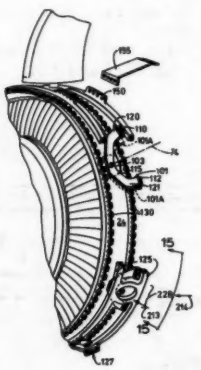
CONNECTION SYSTEM FOR AIRCRAFT PROPELLER BLADES

Sifarat S. Husain; Gerard P. Kroger, both of Cincinnati, and Robert P. Czachor, Blue Ash, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jun. 5, 1989, Ser. No. 361,151

Int. Cl.[5] B64C *11/00*

U.S. Cl. 416—158 **14 Claims**



1. An aircraft propulsion system comprising:

(a) a ring which carries a plurality of propeller blades and which surrounds a rotor; and

(b) a plurality of V-shaped brackets connecting between the ring and the rotor which bend without substantial splaying in response to thermal growth of the rotor with respect to the ring.

5,082,425

CENTRIFUGAL PUMP IMPELLER

Axel Reil, Frankenthal; Rolf Scherer, Hessheim; Jörg Starke, Eppelsheim, all of Fed. Rep. of Germany; Renzo Ghiotte, and Primo Lovisetto, both of Vicenza, Italy, assignors to KSB Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

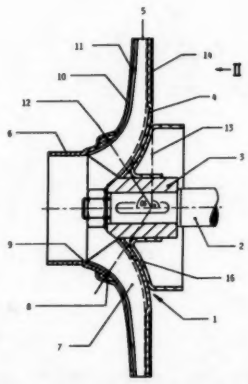
PCT No. PCT/EP88/00823, § 371 Date May 17, 1990, § 102(e) Date May 17, 1990, PCT Pub. No. WO89/02538, PCT Pub. Date Mar. 23, 1989

PCT Filed Sep. 9, 1988, Ser. No. 466,451

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1987, 3731161

Int. Cl.[5] F04D *29/38*

U.S. Cl. 416—188 **16 Claims**



1. An impeller, said impeller having an inlet side and an outlet side and comprising a member which includes a first cover at said outlet side and a plurality of guiding elements for fluid fastened to said first cover, said guiding elements defining flow channels for fluid; an inlet element of variable diameter having a portion of maximum diameter, said inlet element and said member constituting different components; first means non-releasably connecting said inlet element to said guiding elements at said inlet side; a second cover at said inlet side bounding said flow channels and having a section which overlies said portion of said inlet element; and second means connecting said second cover to said guiding elements at a location between said outlet side and said inlet element.

5,082,426

JET PUMP STRUCTURE FOR A FUEL TANK

Michiaki Sasaki; Kiyokazu Yamamoto, and Toshiyuki Matsuki, all of Kanagawa, Japan, assignors to Nissan Motor Company, Limited and Jidosha Denki Kogyo Kabushiki Kaisha, both of Yokohama, Japan

Filed Jul. 14, 1989, Ser. No. 379,784

Claims priority, application Japan, Jul. 15, 1988, 63-176497

Int. Cl.[5] F04F *5/44*

U.S. Cl. 417—198 **5 Claims**

1. A jet pump structure for a fuel tank having first and second chambers therein, comprising:

a vacuum chamber provided within the fuel tank;

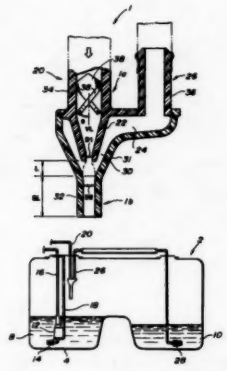
a fuel return pipe connected to said vacuum chamber for returning oversupplied fuel into said vacuum chamber, said fuel return pipe having a tapered portion at its downstream end, said tapered portion working as a nozzle to eject said oversupplied fuel into said vacuum chamber;

a fuel transfer pipe connected to said vacuum chamber for transferring fuel stored in said first chamber into said vacuum chamber;

a throat pipe connected to said vacuum chamber for receiv-

ing the fuel from said fuel return pipe and said fuel transfer pipe to introduce said fuel into said second chamber;

a flow guide member provided within said fuel return pipe, said flow guide member including a pair of wings which extend in opposite directions to cross with each other, each wing extending at a predetermined angle with respect to a vertical axis of said flow guide member for guiding said oversupplied fuel downstream thereof to form said oversupplied fuel into a swirl flow, said swirl flows being ejected from said nozzle as jet swirl flows into said vacuum chamber to provide a vacuum therearound within said vacuum chamber, said ejected jet swirl flow further working to seal said vacuum chamber against said throat pipe such that said vacuum generated within said



vacuum chamber is prevented from being released through said throat pipe to effectively suck the fuel from said first chamber through said fuel transfer pipe; wherein

said jet pump structure having a dimensional relationship such that said predetermined angle of each wing with respect to the vertical axis is 30° to 60°, an inner diameter of a downstream end of said tapered portion of the fuel return pipe is 1.2 mm to 1.5 mm, a length of said throat pipe is 5 mm to 20 mm, a length of a clearance between the downstream end of said tapered portion and an upstream end of said throat pipe is no more than 4 mm, and a ratio of said inner diameter of said throat pipe to said inner diameter of the downstream end of the tapered portion is 1.4 to 3.2.

5,082,427

SCREW COMPRESSING APPARATUS, ROTOR TEMPERATURE CONTROL APPARATUS FOR SCREW COMPRESSING APPARATUS AND OPERATING CONTROL APPARATUS FOR SCREW COMPRESSING APPARATUS

Mitsuru Fujiwara, Ibaraki; Akira Suzuki, Shimizu, and Junji Okita, Ishioka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 4, 1990, Ser. No. 532,812
Claims priority, application Japan, Jun. 5, 1989, 1-141028
Int. Cl.[5] F04B *49/06*
U.S. Cl. 417—292 **4 Claims**

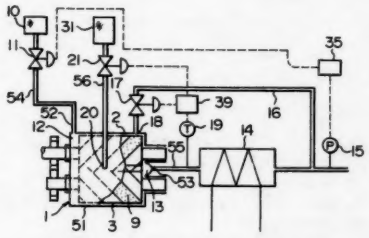
1. A screw compressing apparatus, comprising:

a screw compressor body including paired male and female rotors respectively rotating about two axes parallel to each other while meshing with each other, and a casing having a suction chamber communicating with a suction pipe and an exhaust chamber communicating with an exhaust pipe and accommodating said male and female rotors,

an aftercooler disposed at said exhaust chamber side of said screw compressor body,

an exhaust gas temperature detecting means disposed in one of said exhaust chamber of the compressor body and a pipe system extending from said exhaust chamber to said aftercooler for detecting the exhaust gas temperature,

a gas injection port formed in the screw compressor body, said gas injection port being located so as to communicate with said working space only at a position located in at least an angular region extending from the exhaust process starting position towards the compression process starting position by an angular amount corresponding to one rotor tooth,



a first gas passage connected with said gas injection port for introducing a gas having passed through said aftercooler through a first passage opening and closing means,

a second gas passage connected with said gas exhaust port through a second passage opening and closing means,

a controller for controlling the opening and closing of said first and second passage opening and closing means according to the exhaust gas temperature,

a flow rate control valve disposed in said suction pipe for controlling a flow rate of the suction gas, and

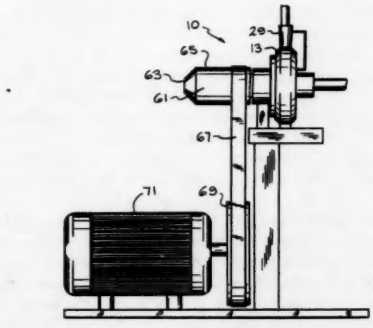
a controller for controlling said flow rate control valve according to the exhaust gas pressure.

5,082,428

CENTRIFUGAL PUMP

Robert A. Oklejas, 774 E. Hurd Rd., and Eli Oklejas, Jr., 1648 W. Lorain, Apt. 202, both of Monroe, Mich. 48161

Filed Aug. 16, 1990, Ser. No. 568,472
Int. Cl.[5] F04B *77/00*; F01D *25/22*
U.S. Cl. 417—362 **37 Claims**



1. A centrifugal pump comprising:

an outer housing defining a pumping chamber;

an impeller rotatably positioned in said chamber for pumping a fluid, said impeller being mounted on the first end of a rotatable shaft; and,

a journal bearing positioned in said outer housing and disposed coaxially around said shaft, a small clearance space being present between said shaft and said journal bearing, said first end of said clearance space closest to said impel-

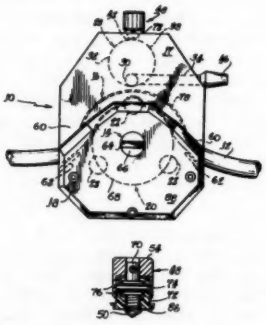
ler being in communication with said region of said chamber adjacent said first end of said shaft whereby said fluid being pumped by said impeller is directed to said first end of said clearance space, said fluid flowing from said end of said bearing that is positioned adjacent to said chamber to said end of said bearing that is spaced apart from said chamber, said fluid providing the lubrication for said journal bearing.

5,082,429

PERISTALTIC PUMP

Charles E. Soderquist, Barrington, and Steven P. Hellstrom, Roselle, both of Ill., assignors to Cole-Parmer Instrument Company, Chicago, Ill.

Filed Aug. 28, 1990, Ser. No. 573,904
Int. Cl.[5] F04B *43/12, 45/08*
U.S. Cl. 417—477 **8 Claims**



1. A peristaltic pump comprising:

a base;

a rotor supported on said base, said rotor comprising a support structure and a plurality of rollers mounted thereon;

a pump head defining an occlusion bed and supported on said base so as to be movable between an open position in which said occlusion bed is spaced from said rotor by a relatively large distance to enable loading and unloading of tubing, and a closed position in which said occlusion bed is spaced from said rotor by a relatively small distance to enable effectuation of peristaltic pumping in the tubing; and

means for displacing said pump head relative to said base between said open position and said closed position comprising a camshaft having a am fixed thereto, an arm extending outward from said camshaft to facilitate manual rotation thereof, and means on said base and pump head to engage said camshaft and cam such that rotation of said camshaft effects displacement of said pump head between said open position and said closed position;

said means for engaging said cam and camshaft including adjustable bearing means for effecting fine adjustments in the position of the occlusion bed in the closed position so as to vary the occlusion of the tubing;

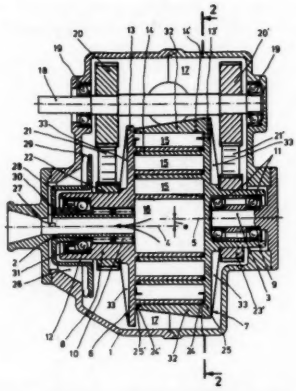
said adjustable bearing means comprising a screw for engaging said cam, and means for reducing friction between said screw and said cam.

5,082,430

ROTATING SPIRAL COMPRESSOR WITH REINFORCED SPIRAL RIBS

Heinrich Güttinger, Wettingen, Switzerland, assignor to Aginfor AG fur Industrielle Forschung, Wettingen, Switzerland

Filed Apr. 9, 1990, Ser. No. 506,186
Claims priority, application Switzerland, Apr. 8, 1989, 01294/89
Int. Cl.[5] F04C *18/04*
U.S. Cl. 418—55.2 **11 Claims**



1. A rotating charger for compressible media having a housing in which two symmetrically constructed displacer disks are located and rotated about respective axes by respective first and second drive means and wherein the two displacer disks include helical ribs which radially oppose each other to form conveying spaces therebetween, an axial end of each rib engaging the opposing displacer disk to form a seal therewith, each conveying space including a radially outwardly located inlet and a radially inwardly located outlet, each rib including a radially outer end located at the inlet of a conveying space formed by that rib, a section of each rib disposed between its own radially outer end and the radially outer end of the next adjacent rib being reinforced by a reinforcement located on a radially outwardly facing rib wall and extending along substantially the entire dimension of the rib in the axial direction.

5,082,431

MECHANICAL SCAVENGING SYSTEM FOR SINGLE SCREW COMPRESSORS

Thomas W. Bein, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy, Bethesda, Md.

Filed Jul. 3, 1986, Ser. No. 885,478
Int. Cl.[5] F04C *18/20, 27/02*
U.S. Cl. 418—97 **5 Claims**

1. A single screw compressor for varying the pressure of a fluid, comprising:

(a) a mainrotor formed with a plurality of threads;

(b) a casing, cooperating with the mainrotor thread crests, forming compression chambers;

(c) at least one compressively operative gaterotor with teeth which are in meshing relation with the mainrotor threads;

(d) a low pressure inlet communicative with said compression chambers;

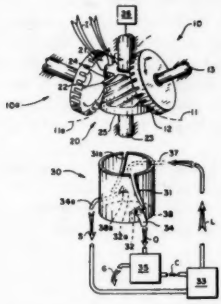
(e) a high pressure outlet communicative with the fluid pressurized by said compressively operative gaterotor;

(f) a means for injection of a liquid seal only to the compression chambers communicative with said compressively operative gaterotor;

(g) at least one auxiliary gaterotor in meshing relation with

said mainrotor threads for wiping residual liquid seal from said mainrotor threads; and,

(h) an auxiliary outlet communicative with the liquid seal wiped from said mainrotor threads by said auxiliary gaterotor, said auxiliary outlet operative to scavenge said



liquid seal from said mainrotor threads after communication of each said compression chamber with the high pressure outlet of said compressor and before communication of each said compression chamber with the low pressure inlet of said compression chamber.

5,082,432

AXIAL SEALING MECHANISM FOR A SCROLL TYPE COMPRESSOR

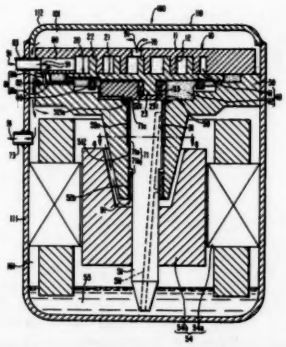
Kazuto Kikuchi, Honjo, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Jun. 1, 1990, Ser. No. 531,691

Claims priority, application Japan, Jun. 2, 1989, 1-139217

Int. Cl.[5] F04C *18/04*

U.S. Cl. 418—55.5 **16 Claims**



1. In a scroll type compressor including a housing, a fixed scroll having a first end plate from which a first spiral element extends, an orbiting scroll having a second end plate from which a second spiral element extends, a block member mounted in said housing in a fixed position relative to said first end plate to define an intermediate chamber in which said orbiting scroll is disposed, said first spiral element and said second spiral element interfitting at an angular and radial offset to make a plurality of line contacts to define at least one pair of sealed-off fluid pockets, a discharge space within said housing which receives compressed fluid discharged from a central fluid pocket defined by said first and second spiral elements, a suction space within said housing which receives suction fluid and passes the suction fluid to the radial outermost fluid pockets defined by said first and second spiral elements, a driving mechanism to effect the orbital motion of said orbiting scroll, and a rotation-preventing mechanism for preventing the rotation of said orbiting scroll during its orbital motion whereby the volume of the fluid pockets change, said second end plate of said orbiting scroll dividing said intermediate chamber into a first chamber in which said first and second spiral elements are disposed and a second chamber in which said second end plate, said rotation-preventing mechanism and a portion of said drive mechanism are disposed, the improvement comprising:

a first throttling conduit linking said second chamber to said discharge space; and

a second throttling conduit positioned in contacting engagement with said drive mechanism and linking said second chamber to said suction space such that said second chamber contains compressed fluid at a substantially constant intermediate pressure to thereby apply a substantially constant axial sealing force between said orbiting and said fixed scrolls.

5,082,433

METHOD FOR PRODUCING A CAM

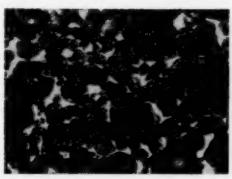
Karl Leithner, Rankweil, Austria, assignor to Etablissement Supervis

Filed Dec. 17, 1990, Ser. No. 629,230

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1989, 3942091

Int. Cl.[5] B22F *1/00*

U.S. Cl. 419—11 **12 Claims**



1. A method for the manufacture of molded articles, including a cam for a camshaft of internal combustion engines which is assembled according to the modular principle, comprising pressing sintering powder of 0.5 to 16% by weight of molybdenum, 1 to 20% by weight copper, 0.1 to 1.5% by weight carbon and, optionally, admixtures of chromium, manganese, silicon and nickel totalling at most 5% by weight, the remainder being iron, into a molded cam with a green density of more than 7 g/cc, sintering the molded cam at a temperature below 1150° C. during a sintering period of 10 to 60 minutes and subsequently hardening and tempering the sintered cam.

5,082,434

TIRE VULCANIZING MACHINE

Atsushi Tomita, and Katsuyoshi Sakaguchi, both of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1990, Ser. No. 561,908

Claims priority, application Japan, Aug. 10, 1989, 1-205587; Feb. 2, 1990, 2-22109

Int. Cl.[5] B29C *35/02*

U.S. Cl. 425—28.1 **3 Claims**

1. A tire vulcanizing machine comprising:

a frame;

upper beams disposed at an upper portion of said frame and fixed thereto, said upper beams extending in a nearly rectangular array so as to define a space therebetween;

upper and lower bolsters disposed within said frame;

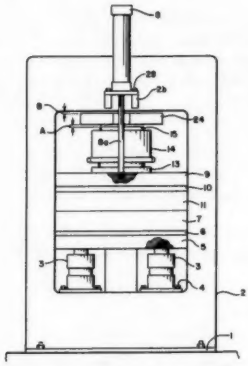
upper and lower molds respectively fixedly secured to said upper and said lower bolsters;

press means, disposed between said frame and said lower bolster, for pressing said lower mold into tight contact with said upper mold under pressure;

a pressure-receiving plate disposed above said upper bolster

and supported in the machine so as to be vertically movable with said upper mold relative to said upper beams, said pressure-receiving plate having a polygonal shape and rotatable about a vertical axis between a first rotational position in which said place can be passed vertically through the space defined between said upper beams and a second rotational position in which said plate cannot be passed vertically through said space;

rotary drive means operatively connected to said pressure-receiving plate for rotating said plate about said axis be-



tween said first and second rotational positions thereof; and

adjust means, interposed between said pressure-receiving plate and said upper bolster, for adjustably establishing and maintaining a vertical clearance between said pressure-receiving plate and said upper beams after said upper mold has been placed on said lower metal mold during a given operational step in the vulcanization of a tire by the machine such that said pressure-receiving plate can be rotated by said drive means without interfering with said upper beams.

5,082,435

TRANSFERRING AND MOLDING APPARATUS

Mikihiro Kuramitsu, Funabashi; Junichi Kabasawa, and Nobuhisa Watanabe, both of Tokyo, all of Japan, assignors to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1989, Ser. No. 458,375

Claims priority, application Japan, Jun. 23, 1989, 1-159707; Jun. 23, 1989, 1-159708

Int. Cl.[5] **B29C** *39/12, 45/14, 45/16*

U.S. Cl. 425—117 **16 Claims**

1. In a transferring and molding apparatus for transferring an image or pattern on an elongate transfer film to a molded article by introducing the transfer film between a stationary mold member and a movable mold member of a mold and holding the transfer film between the stationary and movable mold members simultaneously with an injection molding operation, the improvement wherein said transferring and molding apparatus comprises:

a film feed-out mechanism provided at an upstream side of said mold in a film feed direction for feeding transfer film from a supply drum and for introducing said transfer film between said stationary mold member and said movable mold member;

a film take-up mechanism provided at a downstream side of said mold in the film feeding direction for taking up said transfer film positioned between said stationary mold member and said movable mold member onto a take-up drum;

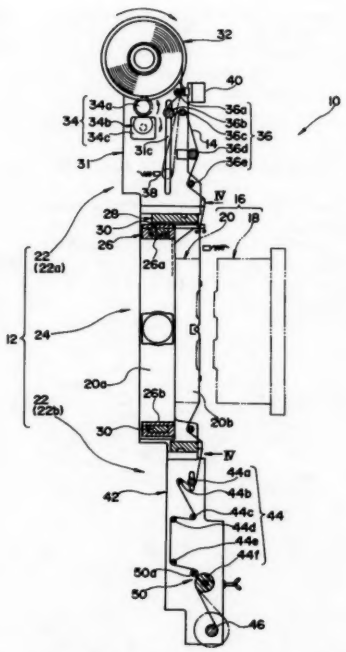
longitudinal direction feeding means for feeding said transfer film in a longitudinal direction thereof from said film feed-out mechanism toward said film take-up mechanism by a predetermined length during each molding cycle, said longitudinal direction feeding means having a first controlling motor;

frame means comprising an inner frame supporting said movable mold member, and an outer frame enclosing said inner frame and supporting said film feed-out mechanism and said film take-up mechanism;

width direction position adjusting means, operatively connected to said inner and outer frames, for adjusting the position of said transfer film in the width direction thereof by changing the relative positions of said inner and outer frames in said width direction, said width direction position adjusting means including a second controlling motor;

a longitudinal direction sensor for detecting a first position setting mark on said transfer film;

a width direction sensor for detecting a second position setting mark on said transfer film;



first control means for, when said mold is open with said stationary and movable mold members separated, rotating said first controlling motor at a high speed until immediately before an amount of the transfer film being fed reaches a predetermined value and thereafter rotating said first controlling motor at a low speed, then when said longitudinal direction sensor detects the first position setting mark, once stopping said first controlling motor, and thereafter further rotating said first controlling motor by a preset rotational angle; and

second control means for, after the rotation of said first controlling motor is completed, rotating said second controlling motor to move said outer frame relative to said inner frame in such a manner that said second controlling motor is stopped when said width direction sensor detects the second position setting mark, and thereafter is further rotated by a preset rotational angle.

5,082,436

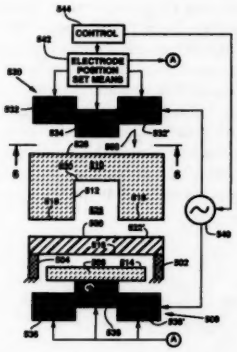
APPARATUS FOR DEFORMING THERMOPLASTIC MATERIAL USING RF HEATING

Tak-Ming Choi, Troy; Adalbert Konrad, Glenville; Bang M. Kim, Schenectady County, and James J. Carroll, Sr., Ballstone Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 379,760, Jul. 14, 1989, abandoned. This application Dec. 18, 1990, Ser. No. 629,003

Int. Cl.[5] B29C *35/12*

U.S. Cl. 425—174.8 R 7 Claims



1. Apparatus for heating plastic material in a mold comprising:

a plurality of spaced apart pairs of electrodes disposed in a mold; and

means for applying a radio frequency signal to each of said pairs of electrodes, each signal applied having a preselectable voltage, with said means for applying a radio frequency signal capable of applying different voltages to different pairs of electrodes.

5,082,437

REACTION INJECTION MACHINE UTILIZING A PLURALITY OF REACTANT LIQUIDS

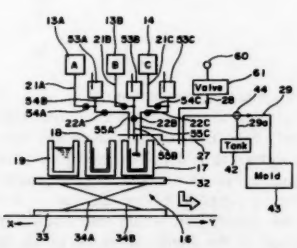
Hiroomi Matsushita, Kobe; Masao Maekawa, Ibaragi; Masaji Hasegawa; Tetsuo Yamaguchi, both of Nishinomiya, and Kunio Niwa, Kobe, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Apr. 11, 1990, Ser. No. 507,505

Claims priority, application Japan, Apr. 13, 1989, 1-94939; Sep. 4, 1989, 1-228643

Int. Cl.[5] B29C *45/24*

U.S. Cl. 425—225 13 Claims



5. A reaction injection machine utilizing a plurality of reactant liquids, in which the reactant liquids are supplied, immediately before being injected into a mold, to a container to be mixed and then, are injected into said mold, said reaction injection machine comprising:

a plurality of supply vessels for containing the reactant liquids, respectively;

a reservoir for containing a washing liquid;

an injection tank which acts as said container;

a washing tank;

a fixed quantity metering device;

said fixed quantity metering device including a plurality of metering tanks provided for said supply vessels and said reservoir, a plurality of metering pipes for connecting said supply vessels and said reservoir with said metering tanks, and a plurality of supply pipes for supplying to said injection tank and said washing tank the reactant liquids metered in corresponding metering tanks and the washing liquid metered in the remaining metering tank, respectively;

said supply pipes having outlet ports disposed adjacent to each other;

a stirrer provided adjacent to said outlet ports;

a pressure cover provided at a location distant from said outlet ports;

a pressure pipe communicating with a source of pressurized gas and an injection pipe communicating with a mold; said pressure pipe and said injection pipe being mounted on said pressure cover so as to extend through said pressure cover;

a carriage provided with an upper plate and means for reciprocatingly moving said carriage below said outlet ports of said supply pipes and said pressure cover so as to be reciprocated horizontally;

means associated with said upper plate for displacing said upper plate in the vertical direction,

an injection tank and a washing tank, said injection tank and said washing tank being mounted on said upper plate in spaced relationship aligned in the direction of horizontal reciprocation of said carriage, said injection tank having an interior in which a first container is disposed for receiving the reactant liquids, said washing tank having an interior in which a second container is disposed for receiving the washing liquid; and

a waste liquid tank;

said injection tank and said washing tank being adapted to be displaced, through travel of said carriage and the raising and lowering of said upper plate, to a first position at which the reactant liquids are supplied, through said fixed quantity metering device, to said injection tank from said supply vessels and are mixed by said stirrer, to a second position at which not only said interior of said injection tank is pressurized by hermetically sealing said injection tank with said pressure cover so as to perform an injection process of injecting into said mold the mixed reactant liquids in said injection tank but also the washing liquid is supplied, through said fixed quantity metering device, into said washing tank from said reservoir; and to a third position at which said interior of said washing tank is pressurized by hermetically sealing said washing tank with said pressure cover so as to deliver the washing liquid in said washing tank to said waste liquid tank through said injection pipe whereby said injection pipe is washed.

5,082,438

PRESS FOR MANUFACTURING STONES

Cornelis Rook, Krimpen aan den Lek, and Willem Klein, Laren, both of Netherlands, assignors to Gebroeders Rook Beheer B.V., Krimpen aan den Ijssel, Netherlands

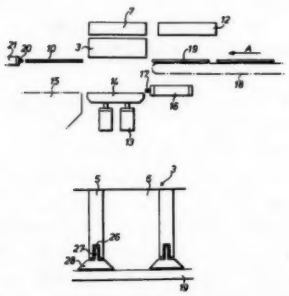
Division of Ser. No. 284,839, Dec. 13, 1988, Pat. No. 4,886,633, which is a continuation of Ser. No. 901,541, Aug. 25, 1986, abandoned. This application Nov. 17, 1989, Ser. No. 437,669

Claims priority, application Netherlands, Aug. 23, 1985, 8502316; Sep. 11, 1985, 8502484

The portion of the term of this patent subsequent to Dec. 12, 2006, has been disclaimed.

Int. Cl.[5] B28B *3/02*; B29C *43/36*

U.S. Cl. 425—358 **22 Claims**



10. Press for manufacturing stones provided with a mould containing a plurality of moulding rooms and filling pieces which, in use, are put under walls bounding the moulding rooms of the mould, said filling pieces having been provided with upright ribs which fit in grooves provided in the walls bounding the moulding rooms.

5,082,439

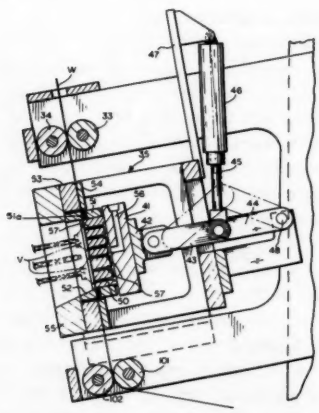
APPARATUS FOR APPLYING LABELS IN THE MOLDS OF A PLASTIC BLOW MOLDING MACHINE

Ronald S. Kaminski, Bowling Green, Ohio, assignor to Owens-Illinois Plastic Products Inc., Toledo, Ohio

Division of Ser. No. 417,369, Oct. 5, 1989, Pat. No. 5,032,344. This application Apr. 1, 1991, Ser. No. 678,822

Int. Cl.[5] B29C *49/24*

U.S. Cl. 425—504 **11 Claims**



1. In an apparatus for making hollow plastic articles wherein a label is positioned in each of a plurality of spaced particle molds in a predetermined array, a preform is positioned in each set of particle molds and the molds are closed and the preforms blown outwardly to the confines of the mold to apply the label to the resultant hollow plastic article, wherein the improvement comprising an apparatus for delivery of the labels which comprises

means for moving a web label material past a die punch station,

a die punch at said die punch station,

vacuum devices,

means for positioning said vacuum devices,

said means for positioning said vacuum devices being operable to position said vacuum devices in a position such that labels can be punched successively from said web and delivered directly to the stationary vacuum devices, and

said positioning means including means for controlling the movement of said vacuum devices in a continuous manner and said vacuum devices are momentarily stationary adjacent said die punch station and are momentarily stationary adjacent a position spaced from said die punch station,

said positioning means being operable to hold the vacuum devices such as to maintain the plane of a label in substantially the same plane at the die punch station and at the position spaced from said die punch station.

5,082,440

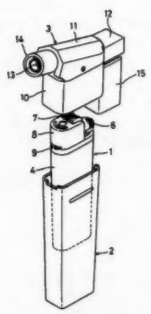
HANDY COMPACT TORCH

Akira Yamamoto, Gamagori, Japan, assignor to Shin Fuji Burner Co., Ltd., Aichi, Japan

Filed Dec. 27, 1990, Ser. No. 634,548

Int. Cl.[5] F23Q *2/00*

U.S. Cl. 431—143 **10 Claims**



1. A torch apparatus, comprising:

a holder adapted to accommodate a lighter therein; and

a torch body detachably mountable on said holder for holding the lighter in said holder, said torch body having a torch nozzle thereon, a connecting pipe means comprising a connecting pipe fluidly communicating with said torch nozzle for fluidly connecting said torch nozzle with an exit nozzle of the lighter, a firing means comprising a depressible firing button for emitting sparks at the tip of said torch nozzle and a link means connected to said depressible firing button for pressing a valve push button of the lighter when said depressible firing button is depressed.

5,082,441

APPARATUS FOR SELECTIVELY BREAKING OUT DEPOSITS FROM AND/OR LININGS OF ROTARY KILNS

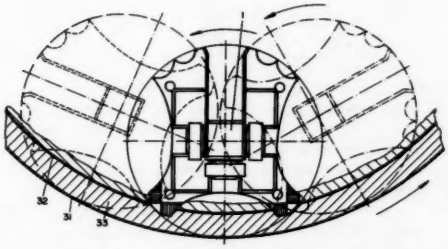
Herbert Schweder; Klaus Löchl; Wolfgang Rausch, all of Magdeburg; Freidrich Hannemann, Berlingerode; Helmut Leitmont; Ditmar Hahn, both of Magdeburg, and Kurt Itziegehl, Deuna, all of Fed. Rep. of Germany, assignors to VEB Spezialbaukombinat Magdeburg, Magdeburg, Fed. Rep. of Germany

Continuation of Ser. No. 328,183, Mar. 24, 1989, abandoned. This application Dec. 5, 1990, Ser. No. 622,371

Claims priority, application German Democratic Rep., Apr. 28, 1988, 315174

Int. Cl.[5] F27D *23/00*

U.S. Cl. 432—75 9 Claims



1. Apparatus for selectively breaking out deposits from and/or lining of rotary kilns, which comprises means for moving the apparatus lengthwise in a kiln, a substantially conical front end having a mounting fixture for attaching the conical front end to the rest of the apparatus, a substantially rounded rear end, a plurality of outwardly curved longitudinal ribs having an outermost point, said ribs being spaced apart from each other around a notional centerline, a transverse rib for securing said spaced apart positioning of said longitudinal ribs, said longitudinal ribs connecting said front and rear ends, a working disk having working elements thereon, said working disk being located substantially between said longitudinal ribs and said rear end, an outer notional straight conicity line drawn between the outer periphery of said working disk and said outermost point, and a momentary inner notional straight conicity line drawn between a point on said working disk which point is within the outermost diameter of said disk by a distance to which working elements have momentarily penetrated into the material to be broken out and a momentary tangential contact point on the outwardly curved longitudinal ribs, the position of said momentary contact point being determined by the extent of the momentary penetration into the material to be broken out, said inner notional conicity line being formed inwardly of said outer notional straight line during operation of the apparatus, and said outer and said inner notional straight conicity lines coincide with each other when the apparatus is not engaged in breaking out operation.

5,082,442

DENTAL CROWN ANALOG FOR ORTHODONTIC ANCHORAGE

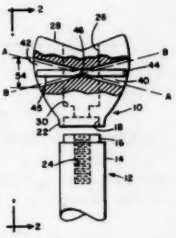
David B. Rosen, 9 Trodden Path, Lexington, Mass. 02173

Filed Jul. 1, 1991, Ser. No. 723,745

Int. Cl.[5] A61C *3/00, 8/00, 5/08*

U.S. Cl. 433—17 20 Claims

1. A prefabricated dental crown analog having an exterior size and contour to approximate the dimensions and shape of a natural tooth and an orthodontic wire anchor consisting essentially of hollow tubular means providing an integral passage extending mesially-distally through said analog closer to an adjacent exterior buccal or lingual surface than to the center thereof, characterized in that said passage has a substantially slot-shaped opening at one end the larger dimension of which



extends generally parallel to said adjacent surface, said larger dimension diminishing progressively along said passage toward the other end of said passage.

5,082,443

DENTAL SPRAY HANDPIECE

Gerd Löhn, Biberach/Rissegg, Fed. Rep. of Germany, assignor to Kaltenbach & Voight GmbH & Co., Biberach an der Riss, Fed. Rep. of Germany

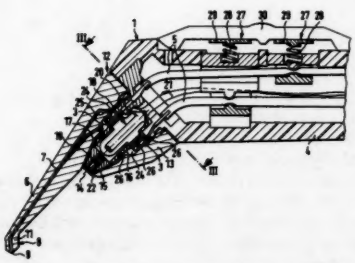
Continuation of Ser. No. 249,790, Sep. 27, 1988, abandoned. This application Nov. 14, 1990, Ser. No. 614,011

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1987, 3734862

The portion of the term of this patent subsequent to Dec. 12, 2006, has been disclaimed.

Int. Cl.[5] A61G *17/02*

U.S. Cl. 433—80 10 Claims



1. Dental spray handpiece, comprising a gripping sleeve having a media connection at one end thereof and a media discharge at an opposite end; media conduits extending through said sleeve from the media connection to the media discharge; a cannula on the media-discharge end of said gripping sleeve for the further advance of media egressing from the media discharge, said cannula including three passageways arranged therein for the further advance of the media, discharge orifices in communication with the surroundings at the free end of said cannula, said cannula including an angled end portion at the free end of said cannula possessing said discharge orifices, said passageways in the cannula being arranged adjacent each other such that the cannula is formed as a flat stem member, said cannula including a lateral thickened portion at the end remote from the free end thereof, said thickened portion including an insert opening having an axis oriented towards the free end of the cannula for detachable attachment of a plug connector projecting from the media-discharge end surface of the gripping sleeve, said thickened portion being arranged such that in the attached condition of said cannula on said handpiece, said thickened portion is located below the portion of the cannula containing said passageways for the further advance of the media; said plug connector having an internal hollow space for the receipt of a light-emitting ele-

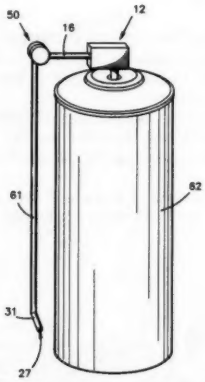
ment, and a light-transmissive opening at the end thereof distant from the gripping sleeve for light emitted by said light-emitting element.

5,082,444

PORTABLE PRESSURIZED PULSED ORALCAVITY CLEANER

Clark J. Rhoades, 181 Tweed Blvd., Nyack, N.Y. 10960, and Stephen J. Gambuti, 616 Ramapo Ave., Pompton Lakes, N.J. 07442

Filed Apr. 10, 1989, Ser. No. 335,687
Int. Cl.[5] A61G *17/02*
U.S. Cl. 433—80 **18 Claims**



1. A hand held, portable, oral cavity cleaning appliance that produces a pulsed stream of fluid, comprising:

(a) input means, including an inlet channel, to receive said fluid under pressure;

(b) output means to deliver said fluid to said oral cavity; and

(c) pulsating means connected between said input means and said output means to provide said stream of fluid in a series of pulses, said pulsating means comprising:

(i) a body;

(ii) an at least partially cylindrical channel defined within said body transverse to the flow of said stream of fluid through said body;

(iii) a close-fitting rotary valve disposed within said channel, said rotary valve comprising:

(1) a cylindrical rotor coaxially aligned with the cylindrical portion of said channel;

(2) a plurality of canted fins extending radially from the surface of said cylindrical rotor and axially between end pieces; and

(3) a transverse channel defined through said cylindrical rotor generally orthogonal to the longitudinal axis thereof; and

(d) an inlet opening defined in said body on one side of said rotary valve for the entry of said fluid into said body and an outlet opening defined in said body on the opposite side of said rotary valve for the exit of said fluid from said body;

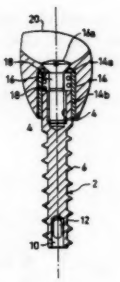
whereby, said cylindrical rotor is caused to rotate when said fluid impinges on said fins after passing through said inlet opening and said pulses are produced by the intermittent passage of some of said fluid through said transverse channel as said cylindrical rotor rotates.

5,082,445

OSTEOINTEGRATED IMPLANTS AND DENTAL IMPLANT ASSEMBLIES

Shmuel Singer, 3 HaTechiyah Street, Kfar Saba, Israel

Filed Dec. 19, 1988, Ser. No. 285,929
Claims priority, application Israel, Aug. 12, 1988, 87432
Int. Cl.[5] A61C *13/28*
U.S. Cl. 433—169 **17 Claims**



1. An osteointegrated implant for implantation into the jawbone of a person in order to secure a crown, bridge or denture thereto, comprising:

a shank formed with external threads at one end receivable in a bore formed in the jawbone;

a cap at the opposite end of the shank and formed with an apertured end wall, to which cap the crown, bridge or denture is securable;

a threaded pin threadable into said opposite end of the shank through the apertured end wall of the cap for removably securing said cap to the shank; and

a shock-absorber spring interposed between said cap and said opposite end of the shank to absorb mastication forces applied to the crown, bridge or denture when secured to said cap;

said opposite end of the shank being of cyclindrical configuration, and said cap having a cylindrical side wall enclosing said opposite end of the shank with a small clearance to permit some lateral as well as axial movement of the cap with respect to said shank.

5,082,446

METHOD FOR THE ASSESSMENT OF SEVERE DEMENTIA

Steven G. Sclan, 10 Waterside Plaza, Apt. #30B, and Barry Reisberg, 20 Waterside Plaza #7K, both of New York, N.Y. 10010

Filed Jun. 12, 1990, Ser. No. 537,921
Int. Cl.[5] G09B *19/00*
U.S. Cl. 434—236 **3 Claims**

1. A process for the development of cognitive and psychological tests useful for the assessment of mental status in severely cognitively impaired dementia patients comprising the steps of

a) selecting a full psychological test battery for infant cognitive development,

b) eliminating tasks of said test battery beyond the physical capabilities of severely demented patients,

c) substituting unfamiliar stimulus objects used in said test battery with already familiar or utilitarian stimulus objects relevant in the patient's adult experience,

d) modifying examining procedures of said test battery to accommodate any physical limitations of dementia patients, and

e) modifying scoring methodology of said test battery to adapt to the physical limitations of dementia patients.

5,082,447

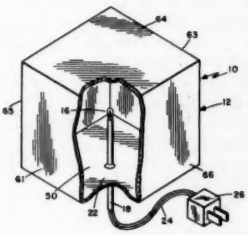
STAR PROJECTION DEVICE

Tobin Hinkle, 8802 Carlton Oaks Dr., Santee, Calif. 92071

Continuation-in-part of Ser. No. 390,369, Aug. 7, 1989, abandoned. This application Oct. 1, 1990, Ser. No. 591,087

Int. Cl.[5] G09B *27/00*

U.S. Cl. 434—286 7 Claims



1. A star projection device, comprising:

an opaque film sheet folded to form a six-sided cubical enclosure;

the film sheet having transparent regions arranged over its entire area at predetermined positions corresponding to the relative positions of stars when projected onto a viewing surface; and

a light source rigidly mounted at the center of the enclosure for projecting light simultaneously through the transparent regions in each of the six sides of the enclosure onto surrounding surfaces to produce a substantially 360°, horizonless projection of the stars.

5,082,448

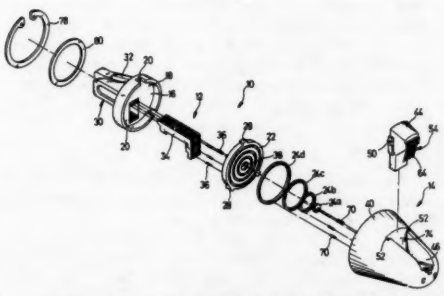
ROTATABLE ELECTRICAL CONNECTOR

Steve Kang, No. 49, Lane 81, Lee Sinn Road, Sec 2, Sanchung City Taipei Hsien, Taiwan, Taiwan

Continuation-in-part of Ser. No. 369,323, Jun. 21, 1989, Pat. No. 4,932,882. This application May 31, 1991, Ser. No. 708,454

Int. Cl.[5] H01R *39/00*

U.S. Cl. 439—22 1 Claim



1. A rotatable electrical connector for a telephone handset having a first part and a second part which are rotatable with respect to each other, comprising:

said first part including a mounting base for receiving a circular printed circuit board with a plurality of circular circuit conductors laid thereon, said mounting base having a modular plug thereon for connection to said handset, said modular plug having a plurality of conductive laminates for electrically contacting respectively a first plurality of spring loaded contact assemblies, said first plurality of spring loaded contacts penetrating a first plurality of holes in said printed circuit board and then electrically contacting respective said circuit conductors;

said second part coupled to said first part for rotation relative to said first part about a central axis common to said first and second parts, said second part including a shell having a second plurality of holes therein in line with said circuit conductors, said shell having a top portion for receiving a wire guide, said wire guide and shell defining a receptacle thereon which are located on said second part at an acute inclined angle displaced from said common axis preferably by substantially about 45 degrees to accept at said inclined angle from said common axis an external modular plug having a cord attached thereto which can be twisted, said wire guide is fitted with a plurality of spring wire contact elements which is generally C-shaped to serve as the spring contact for said external modular plug, said C-shaped spring wire contact elements electrically contacting respectively a second plurality of spring loaded contact assemblies which penetrate said second plurality of holes in said shell and then electrically contacting respective said circuit conductors of said printed circuit board; and

a C-clamp for retaining said mounting base for rotation in said shell and for holding said circuit conductors in moveable contact with one of said spring wire contact elements.

5,082,449

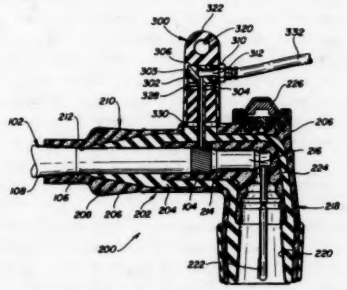
REMOVABLE MEDIA INJECTION FITTING

Alan D. Borgstrom, Hackettstown, N.J.; Glen J. Bertini, Bay City, and Daniel F. Meyer, Midland, both of Mich., assignors to Amerace Corporation, Parsippany, N.J. and Dow Corning Corporation, Midland, Mich.

Filed Jul. 28, 1990, Ser. No. 573,726

Int. Cl.[5] H01R *4/58*

U.S. Cl. 439—88 8 Claims



1. A removable media injection fitting for use with a high voltage separable connector component having an access with a central bore therethrough to the interior of said component, comprising:

a body portion having a first end and a second end and at least one side surface, a passage within said body portion between said side surface and said first end;

a pin having a bore therethrough coupled to said passage adjacent said first end of said body portion for direct insertion into the bore of said access;

coupling means connected to said side surface for introducing or withdrawing a medium from said passage; and

a skirt portion connected to said body portion adjacent said first end so proportioned and configured to be positionable upon the outer surface of said component access when said pin is inserted into the bore of said component access.

5,082,450

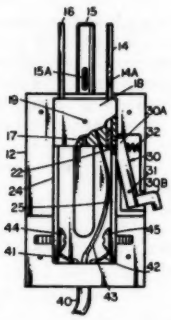
SAFETY PLUG WITH GROUND LOCK AND PRONG LOCKS

Charles C. Warren, Sr., and Shirley J. Warren, both of P.O. Box 4725, Estes Park, Colo. 80517

Filed Nov. 5, 1990, Ser. No. 575,989

Int. Cl.[5] H01R *13/639*

U.S. Cl. 439—102 **6 Claims**



1. An electrical plug for attachment to the end of an electrical power cord having electrical wires and a ground wire therein, said plug comprising:

(a) a body member having first and second ends;

(b) spaced-apart first and second plug prongs carried by said body member and being slidably movable between (i) a retracted position in which said plug prongs are within said body member, and (ii) an extended position in which said plug prongs project forwardly from said first end of said body member; wherein said plug prongs are electrically connected to said electrical wires in said body member;

(c) a ground prong carried by said body member and projecting forwardly from said first end of said body member; wherein said ground prong includes an interior cavity and an aperture which communicates with said cavity; wherein said ground prong further includes a lock spring in said cavity which includes a raised portion which projects outwardly through said aperture and which is normally deflectable into said cavity;

(d) an arm attached to said plug prongs for slidable movement relative to said body member for movement of said plug prongs between said retracted and extended positions;

(e) lock means for locking said plug prongs selectively in said retracted position and in said extended position; and

(f) an elongated locking bar carried by said arm; said locking bar being movable between (1) a first position in which it is slidably received in said cavity in said ground prong for preventing said raised portion of said lock spring from being deflected into said cavity, and (2) a second position in which said locking bar is retracted from said cavity.

5,082,451

CLOCK SPRING CONNECTOR WITH CABLE DRIVING MECHANISM

Hiroyuki Bannai, Furukawa, and Hironori Kato, Sendai, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1990, Ser. No. 633,885

Claims priority, application Japan, Dec. 26, 1989, 1-148720[U]

Int. Cl.[5] H01R *35/04*

U.S. Cl. 439—164 **2 Claims**

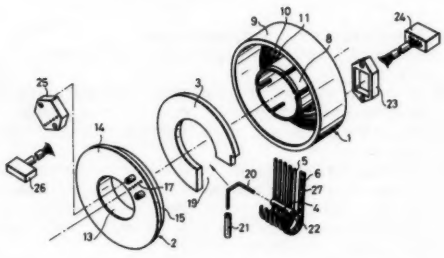
1. A clock spring electrical connector comprising:

a stationary member defining a first cable receiving portion having a plurality of first projection strips defining first cable receiving grooves;

a movable member rotatably coupled to said stationary member, said movable member defining a second cable receiving portion having a plurality of second projection strips defining second cable receiving grooves;

a plurality of electrical cables each having one end coupled to said stationary member and another end coupled to said movable member, portions of said cables wound in a first direction in said first cable receiving grooves, and other portions of said cables wound in a second direction in said second cable receiving grooves;

a driving belt having one end coupled to said stationary member and another end coupled to said movable member, said driving belt having one portion wound in said first direction in said first cable receiving portion, and another portion wound in said second direction in said second cable receiving portion;



a spacer rotatably disposed between said first and said second cable receiving portions, said spacer including an opening; and

a driving roller rotatably disposed in said opening, said plurality of cables being looped around said driving roller, said driving belt being operably coupled to said driving roller such that when said movable member is rotated with respect to said stationary member, said belt is unwound from said first or second cable receiving portion, passed through said opening in said spacer and rewound on said second or first cable receiving portion, and said first cable receiving grooves and said second cable receiving grooves being opposed such that when a portion of one of said cables is transferred from one of said first or second cable receiving grooves, said portion of said cable is passed through said opening to an opposed second or first cable receiving groove.

5,082,452

CLAMP-TYPE ELECTRICAL CONNECTORS

Tsunesuke Takano, Tokyo, Japan, assignor to Daiichi Denso Buhin Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1989, Ser. No. 454,747

Claims priority, application Japan, Dec. 21, 1988, 63-165335[U]; Feb. 20, 1989, 1-18789[U]; Mar. 23, 1989, 1-32841[U]; Mar. 23, 1989, 1-32842[U]

Int. Cl.[5] H01R *13/18*

U.S. Cl. 439—206 **9 Claims**

1. A clamp-type electrical connector comprising an electrically insulating substrate, and connectors mounted on said insulating substrate, wherein

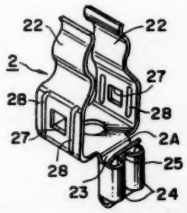
(a) said electrically insulating substrate includes a connector mounting portion having confronting lugs formed thereon;

(b) said connectors are each integrally provided with (i) a pair of clamping pieces each made of an elastic electrically conductive plate having an electrically conductive base which defines a mounting hole, and (ii) an electrically conductive plug-in connection piece adapted to resiliently

engage an electrical component to establish electrical connection therewith;

(c) each of said connectors being mounted on said connector mounting portion by means of said lugs engaging a respective one of said mounting holes defined on the base of said clamping pieces;

(d) said base of each of said clamping pieces also has a pair of raised ribs which contact a surface of said connector mounting portion so as to establish a space between said



clamping piece and said surface of said connector mounting portion through which heat generated during use may be vented; and wherein

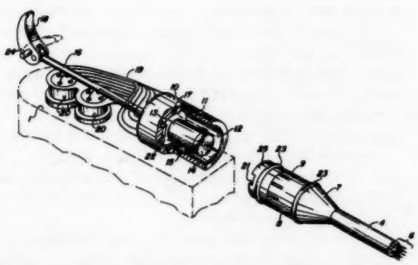
(e) an integral side of each of said connectors forms a support piece which is folded back onto a surface of a respective said plug-in connection piece to thereby press against said surface and thereby increase the resilient engagement exerted by said plug-in connection piece against the electrical component.

5,082,453

MULTI-CONTACT CONNECTOR SYSTEM FOR AN IMPLANTABLE MEDICAL DEVICE

William H. Stutz, Jr., Burbank, Calif., assignor to Siemens-Pacesetter, Inc., Sylmar, Calif.

Filed May 16, 1991, Ser. No. 701,283
Int. Cl.[5] H10R *13/62, 13/15*
U.S. Cl. 439—265 **10 Claims**



1. A multi-contact connector assembly for an implantable medical device, said device having a housing for a source of electrical energy and electronic circuitry, and a lead for delivering said electrical energy in vivo from said housing to a body site, said connector assembly comprising:

a hollow, radially expandable plug connected to said lead having a plurality of contacts on an exterior surface thereof;

a socket carried on said housing having a plurality of contacts on an interior surface thereof, said socket having dimensions for loosely receiving said plug with said contacts on said plug in spaced radial registry with said contacts on said interior surface of said sleeve; and

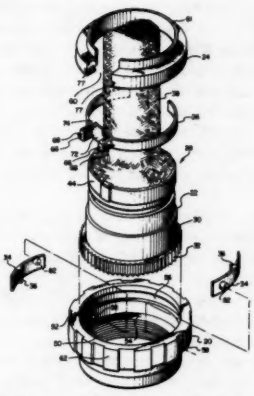
actuatable means disposed in said socket, and received in said plug when said plug is received in said socket, for radially expanding said plug for respectively mechanically and electrically connecting said contacts on said plug with said contacts on said interior surface of said socket.

5,082,454

TWO-PIECE RETAINING RING

David W. Tonkiss, Glendale, and Thomas F. Young, Simi Valley, both of Calif., assignors to Joslyn Corporation, Chicago, Ill.

Filed Sep. 28, 1989, Ser. No. 413,783
Int. Cl.[5] H01R *4/38*
U.S. Cl. 439—320 **21 Claims**



1. A retaining ring assembly for axially securing a coupling nut, formed with an interior annular groove to a tubular sleeve comprising:

a C-shaped retaining ring; and

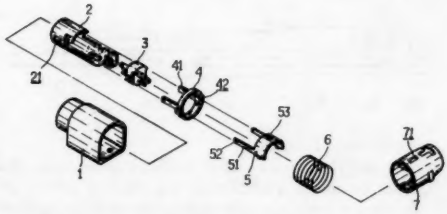
means at least partially disposed in said gap and at least partially disposed between said C-shaped retaining ring and said tubular sleeve for keeping said ends spread apart after said retaining ring is received in said annular groove.

5,082,455

LOCK ASSEMBLY OF A DIN TYPE CONNECTOR

Mu-Kang Wei, No. 160, Chung-chen Road, Sec. 2, Hu-Kou Hsiang, Hsinchu, Taiwan

Filed Jan. 18, 1991, Ser. No. 642,798
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—352 **1 Claim**



1. A lock assembly of a DIN type connector, comprising:

a tubular housing having a longitudinally extended passageway extending therethrough, said passageway having a shoulder formed therein;

a first cover member having a cylindrical portion formed on one end thereof, said first cover member being slidingly received within said passageway of said housing, said first cover member having a pair of slotted through openings formed on opposing sides of said cylindrical portion;

a body member coupled to said first cover member for positionally locating and supporting electrically conduc-

tive pins within said cylindrical portion of said first cover member;

a coupling slidably coupled to said body member, said coupling having (1) a base portion defined by an annular ring, and (2) a pair of lever members extending axially from said annular ring, said annular ring having a pair of through openings formed therein, each of said pair of through openings being disposed adjacent a respective one of said pair of lever members and extending axially through said annular ring;

a second cover member coupled to said first cover member, said second cover member having a pair of legs extending axially from opposing sides thereof, each of said legs being received within a respective one of said slotted through openings formed in said first cover member, each of said legs having a protrusion formed on a distal end for locking interface with a mating connector, each of said legs being slidingly received within a respective one of said through openings formed in said second cover member for additional support thereof, each of said lever members being disposed adjacent an inner surface of a respective one of said legs;

a coil spring overlaying at least a portion of said second cover member and having a first end contacting said annular ring of said coupling for applying a bias force thereto; and,

a cap member coupled to said second cover member, said cap member being received within said housing and contacting a second end of said coil spring, whereby said legs are free to disengage from said locking interface responsive to a rearward displacement of said housing against said bias force, said shoulder of said housing engaging said annular ring for displacing said lever members rearwardly.

5,082,456

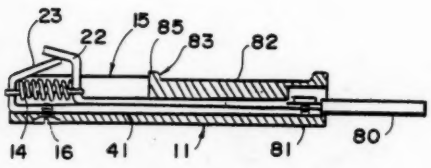
CONNECTOR

Shirley S. Lan, 26 Ocean St., Millburn, N.J. 07041

Filed Aug. 23, 1989, Ser. No. 397,400

Int. Cl.[5] H01R *11/24*

U.S. Cl. 439—504 **31 Claims**



1. A connector comprising:

a) generally elongated member having a substantially elongated opening, said member having a hollow portion with an interior surface in communication with an open forward portion and a rearward portion;

b) means for connecting to an object, said means being positioned in said hollow portion, said means for connecting comprising a first contact surface and a second contact surface extending outwardly from said open forward portion of said generally elongated member; and

c) means for slidably biasing said first contact surface and said second contact surface towards each other whereby said first contact surface and said second contact surface are separated from each other by applying a force against said second contact surface.

5,082,457

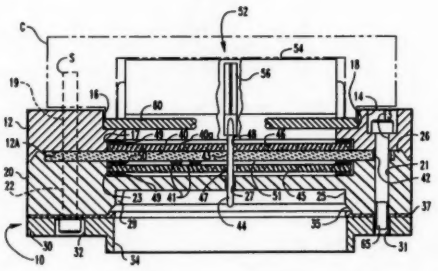
FILTER ELECTRICAL CONNECTOR

Allen N. Wollscheidt, Columbus, and David P. Porter, Greenwood, both of Ind., assignors to Cummins Electronics Company, Inc., Columbus, Ind.

Filed Mar. 29, 1991, Ser. No. 677,654

Int. Cl.[5] H01R *13/66*

U.S. Cl. 439—620 **9 Claims**



1. A filter electrical connector for engagement between a first and a second mating electrical connector, in which the first mating connector is electrically connected to an electronic device using EMI filtered signals carried by the filer electrical connector and includes a conductive case for a low inductance connection to the device ground, the filter electrical connector comprising:

a first housing formed of an electrically conductive material defining a first recess and having first means for engaging the first mating connector, a first conductive surface adjacent said first means for engaging and a second conductive surface displaced from said first surface;

a second housing formed of a non-conductive material and having means for engaging the second mating connector;

a filter assembly including:

a circuit board carrying a circuit pattern and a number of capacitor elements, said circuit board having a ground plane, said circuit pattern providing electrical connection between each of said number of capacitor elements and said ground plane; and

a number of electrical connector pins attached to said circuit board, each of said pins being in electrical contact with a corresponding one of said number of capacitor elements, wherein said number of connector pins provide an electrical connection between the first and second mating connectors;

means for supporting said filter assembly between said first and second housings when said housing are connected together, whereby said ground plane of said circuit board is maintained in intimate electrical contact with said second conductive surface of said first housing;

means for connecting said first housing and said second housing together; and

means for providing a low inductance electrical contact between said first conductive surface of said first housing and the case of the first mating connector when the first mating connector is engaged to said first housing by said first means for engaging.

5,082,458

FUSE HOLDER

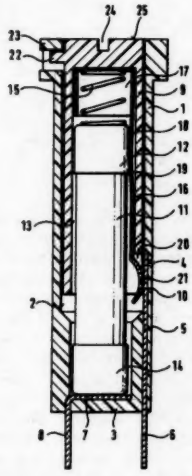
Karl D. Poerschke, Sprockhovel, Fed. Rep. of Germany, assignor to Wickmann-Werke GmbH, Witten, Fed. Rep. of Germany

Continuation of Ser. No. 149,900, Jan. 28, 1988, abandoned, which is a continuation of Ser. No. 896,187, Aug. 14, 1986, abandoned. This application Sep. 15, 1989, Ser. No. 408,428

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1985, 8523729

Int. Cl.[5] H01R *33/95;* H01H *85/02*

U.S. Cl. 439—621 11 Claims



1. Fuse holder for holding a fuse link comprising a substantially tubular casing having a closed bottom and an open top,

a substantially tubular carrier for receiving the fuse link having a closed top and an open bottom, a foot contact extending across the closed bottom of the casing for electrically contacting the first of the two metal caps of the fuse link, the foot contact being extended downwardly out of the casing bottom for forming a first contact lug,

a side contact within the tubular casing extending downwardly out of the casing bottom for forming a second contact lug, a bayonet-type lock provided between said carrier and said casing, a contact bridge within the carrier for electrically connecting the second of the two metal caps of the fuse link to said side contact when the carrier together with the fuse link is locked into the casing by said bayonet-type lock,

a spring received between the inside of the closed top of said carrier and the second metal cap of the fuse link for urging the first metal cap against said foot contact in the locked position of said carrier and said casing,

said contact bridge having the shape of an elongated metal strip terminating in a contact tongue,

said side contact having the shape of an elongated metal strip, anchoring means for retaining said contact bridge metal strip against rotational movement within said carrier,

positioning means for allowing only one rotational position of said carrier within said casing in the locked position between said casing and said carrier, and

said contact bridge metal strip and said side contact metal strip being mounted within said carrier and said casing respectively so that only in the locked position of said carrier and said casing do said metal strips contact each other.

5,082,459

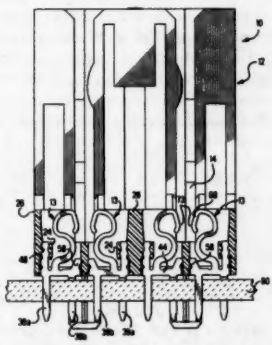
DUAL READOUT SIMM SOCKET

Timothy B. Billman, King, and Roger L. Thrush, Clemmons, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 23, 1990, Ser. No. 572,196

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—637 4 Claims



1. A dual readout SIMM socket for establishing electrical contact with electrical isolated circuit traces on no more than 0.050 inch center-line spacing on opposite surfaces of a single in line memory module, said socket comprising:

a housing having a module receiving slot extending between and into module-retaining grooves at each end of said housing and terminal receiving slots normal to and intersecting said module receiving slot on both sides thereof; and

a plurality of terminals disposed in said terminal receiving slots and having a S-shaped spring section with a trace engaging contact point on a depending arm extending into said module receiving slot, a base section having an upper edge from which said spring section extends, a lower edge from which a lead extends, a retaining post at one end extending outwardly parallel and adjacent to a side wall and having retaining barbs thereon for engaging said side wall and a stabilizing post at another end which extends obliquely outwardly therefrom for engaging a center rib of said housing.

5,082,460

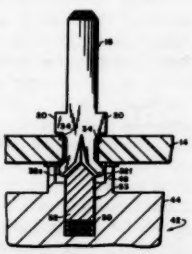
ELECTRICAL TERMINAL WITH FRANGIBLE MOUNTING LEG AND METHOD OF FORMING THE SAME

Janos Legrady, Putnam Valley, N.Y., assignor to Zierick Manufacturing Corporation, Mount Kisco, N.Y.

Continuation-in-part of Ser. No. 415,964, Oct. 2, 1989, Pat. No. 5,017,159. This application Dec. 31, 1990, Ser. No. 636,286

Int. Cl.[5] H01R *13/415*

U.S. Cl. 439—741 20 Claims



1. A solid single leg terminal comprising an electrical con-

ductor end portion at one end and an opposing substantially solid mounting end portion for mounting through a hole of a printed circuit board, said mounting end portion forming an elongated mounting leg of substantially uniform cross-section and defining a longitudinal axis, said mounting leg being dimensioned to be substantially freely receivable within the hole from one side of the printed circuit board through to the other side of the printed circuit board, two indentations being provided on opposite sides of said mounting end portion substantially parallel to the longitudinal axis and each defining a frangible line substantially parallel to the longitudinal axis, said frangible lines of said indentations together comprising a frangible web of minimum thickness material, each of said indentations having triangular cross-sections of decreasing dimensions in the direction of said connector end portion in planes normal to said longitudinal axis.

5,082,461

WIRE TO PIN TERMINATION

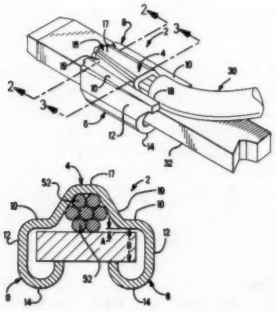
Alan J. Minnis, London, and Michael J. G. Whelan, Hitchon, both of England, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 30, 1990, Ser. No. 606,008

Claims priority, application United Kingdom, Oct. 30, 1989, 8924358

Int. Cl.[5] H01R *4/48*

U.S. Cl. 439—786 **8 Claims**



1. A terminal clip for holding a conductor against, and in electrical contact with a terminal post, the terminal clip having a conductor receiving section and mounting sections, the terminal clip being characterized in that:

the conductor receiving section has an elongated channel provided therein for compressively applying pressure against said conductor lying therewithin, the channel has a uniformly decreasing cross-section configuration along the full length thereof, the channel cooperates with the conductor to insure that the conductor is precisely positioned in the channel, said channel providing substantially the entire means of the clip for applying pressure against the conductor to press it against the terminal post,

the mounting sections have the characteristic of resiliency, where the configuration of which insures that, with the conductor inserted into the channel, the mounting section will deform within its elastic limit;

whereby as the clip is exposed to various environments, the clip will compensate for dimensional variations, and generate an adequate normal force to maintain the conductor and the post in electrical engagement.

5,082,462

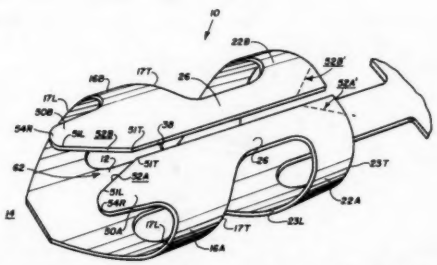
RIBBED TERMINAL HAVING PIN LEAD-IN PORTION THEREON

Joseph A. Oswald, Jr., Mechanicsburg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 281,425, Dec. 8, 1988, abandoned. This application Oct. 9, 1990, Ser. No. 592,171

Int. Cl.[5] H01R *11/22*

U.S. Cl. 439—851 **2 Claims**



1. In a terminal having a spine with an axis extending therethrough, at least one pair of ribs extending from the spine, each of the ribs having a free end thereon, the free end of each rib having an undersurface thereon, the ribs being bent such that the free ends thereof are proximal to each other with a gap therebetween and the undersurfaces of the free ends are diametrically opposed to and spaced from the spine thereby to define a rib cage structure generally enclosing a pin receiving opening, the pin receiving opening having a predetermined axial length associated therewith and having an input end, each rib having a leading edge angularly disposed in a rearward direction away from the input end, the ribs being movable from a first, relaxed, position to a second, operative, position,

in the first position the undersurfaces of the free ends of the ribs being spaced a first distance from the spine to impart to the pin receiving opening a constant dimension throughout its axial length, while in the second position the undersurfaces of the free ends of the ribs being spaced a second, greater, distance from the spine, the pin receiving opening being adapted to receive therein a pin having an exterior surface thereon so that when the pin is received in the terminal the rib cage structure surrounds the exterior surface of the pin with the pin in engagement with the spine, the improvement comprising:

each of the ribs having a forwardly extending tab thereon adjacent the input end of the pin receiving opening of the terminal, each tab having an angularly disposed edge surface thereon, the edge surfaces leading toward the gap,

the edge surfaces axially confronting each other and cooperating to define a lead-in disposed adjacent to the input end of the pin receiving opening of the terminal and axially forwardly thereof for leading a pin inserted into the pin receiving opening in a direction parallel to the axis thereof, the edge surfaces defining the lead-in being responsive to contact with a pin to urge apart the free ends of the ribs from the relaxed toward the operative position as the pin is inserted into the terminal, thereby to facilitate the entry of the pin into the pin receiving opening.

5,082,463

BUSBAR INTERCONNECTING STRUCTURE

Tetsuro Saimoto, Kosai, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Aug. 15, 1990, Ser. No. 567,522

Claims priority, application Japan, Aug. 24, 1989, 1-97937[U]

Int. Cl.[5] H01R *31/08*

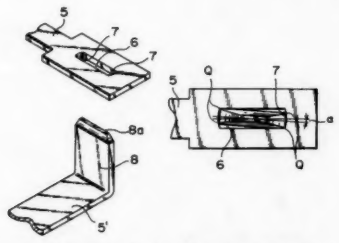
U.S. Cl. 439—883 **4 Claims**

1. A busbar interconnecting structure comprising:

a tab formed integral with a first busbar, said tab having a

cross-section of elongate form defined by a pair of opposed long sides joined at their ends by a pair of opposed short sides with each short side formed as an arc; and

a slot formed in a second busbar, said slot being of elongate form and having a pair of opposed long straight sides joined at their ends by a pair of opposed short sides with each short side formed as an arcuate surface and a width



between said opposed long sides of said slot slightly larger than a thickness measured between said opposed long sides of said cross-section of said tab; whereby said tab may be inserted under pressure into said slot to form a secure connection between said first and second busbars including pressure engagement of portions of said tab with said arcuate surfaces of said slot and the long sides of said slot adjacent the long sides of said tab.

5,082,464

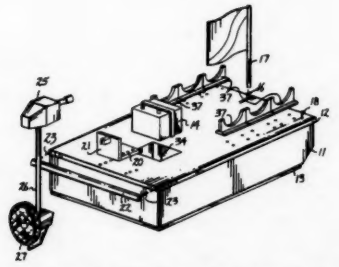
DIVER TOW VESSEL APPARATUS

Mason L. Clink, P.O. Box 746, Susanville, Calif. 96130

Filed Mar. 12, 1991, Ser. No. 668,097

Int. Cl.[5] B63C *11/46*

U.S. Cl. 440—6 **7 Claims**



1. A diver tow vessel apparatus comprising, in combination,

an elongate float body, the float body formed of a buoyant material, including spaced side walls, a forward wall spaced from and parallel a rear wall, and

a planar top wall spaced from and parallel a bottom wall, and

a top plate mounted contiguously to and extending beyond the forward wall and rear wall, and

a bottom plate mounted to the bottom wall, and

a battery mounted medially of the top plate, and

an "L" shaped mounting plate mounted to a rear terminal edge of the top plate, and

an electric trolling motor mounted to the "L" shaped mounting plate in electrical communication with the battery, and

a plurality of "L" shaped mounting hooks positioned adjacent a forward edge of the top plate and including a rope member mounted therebetween, and

a flag socket mounted adjacent to and medially of the forward edge of the top plate, wherein the flag socket includes a flag shaft mounted within the flag socket, wherein the flag shaft includes a diver's flag positioned thereon, and

support means positioned between the battery and the flag socket for supporting a plurality of air tanks thereon.

5,082,465

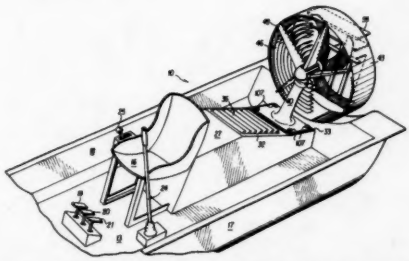
AIR THRUST PROPULSION BOAT-DRIVE TRAIN

David E. Wine, The Penthouse South, 2200 N. Atlantic, Daytona Beach, Fla. 32018

Filed May 25, 1989, Ser. No. 357,017

Int. Cl.[5] B63H *37/00*

U.S. Cl. 440—37 **69 Claims**



1. A propeller-driven air boat having a hull, and comprising;

a source of power disposed in said hull;

an air propeller for driving the boat, operatively connected to said source of power for rotating said propeller;

means for mounting said propeller adjacent the stern of the boat, said propeller mounting means being mounted for angular movement about a generally upright axis that is disposed in a plane that passes through the fore-and-aft centerline of said hull;

rudder means, mounted to said propeller mounting means such that said rudder means moves with said propeller mounting means, for controlling the direction of movement of the boat; and

means for rotating said propeller mounting means about said generally upright axis to turn said propeller for controlling the direction of movement of the boat.

5,082,466

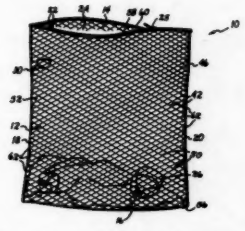
ANTI-STATIC GARMENT BAG FOR REDUCING STATIC BUILDUP IN THE DRYCLEANING PROCESS

Gerald N. Rubenstein, Pittsburgh, Pa., and John H. Geer, Cincinnati, Ohio, assignors to Fabritec International Corporation, Cold Spring, Ky.

Division of Ser. No. 241,403, Sep. 7, 1988, Pat. No. 4,989,995. This application Jan. 22, 1990, Ser. No. 468,211

Int. Cl.[5] D06F *43/00*

U.S. Cl. 8—142 15 Claims



1. A method for reducing static buildup on garments during a solvent based dry-cleaning process with a garment bag having a sidewall formed substantially of non-conductive yarns joined together to define a plurality of interstices sized to permit solvent and dirt from garments contained in the garment bag, but no the garments themselves to pass therethrough, the garment bag further having an opening sized to permit garments to pass therethrough and through which garments are receivable into the garment bag, the method comprising:

interspersing a plurality of conductive strands in the sidewall of the garment bag to render the sidewall conductive and the garment bag anti-static;

passing at least one of the garments through the opening and into the garment bag before performing the dry-cleaning process;

placing the garment bag in a dry-cleaning machine along with a load of garments to be dry-cleaned; and

performing the dry-cleaning process.

5,082,467

DYE COMPOSITION FOR KERATINOUS FIBERS

Tadashi Tamura; Akira Kiyomine; Michio Tanaka; Yoshinori Nishizawa, all of Ichikai; Hidetoshi Tagami, Tokyo; Masahiko Ogawa, Tokyo; Toru Yoshihara, Tokyo; Tsutomu Muraoka, Tokyo, and Jiro Kawase, Tokyo, all of Japan, assignors to Kao Corporation, Tokyo, Japan

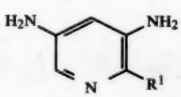
Filed Jan. 25, 1991, Ser. No. 645,821

Claims priority, application Japan, Feb. 8, 1990, 2-28829; Dec. 21, 1990, 2-412660; Dec. 21, 1990, 2-412661

Int. Cl.[5] A61K *7/13*; C07D *213/04, 213/22*; C07C *321/00*

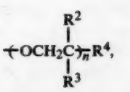
U.S. Cl. 8—409 3 Claims

1. A dye composition for keratinous fibers comprising a developing substance and, as a coupling substance, a 3,5-diaminopyridine derivative of the following formula (I),



(I)

wherein R^1 is an alkoxy group or a group



wherein R^2 and R^3 may be the same or different and individually represents a hydrogen atom or a hydroxyalkyl group, r^4 a hydroxy, alkoxy, or hydroxyalkyl group, and n is a number of 1–4; or a salt thereof.

5,082,468

METHOD FOR PIGMENTING FABRICS OF GARMENTS IN TUMBLING MACHINE TO CREATE A NONUNIFORM SURFACE FINISH EFFECT AND COMPOSITION USEFUL IN SAME

Gregory J. Hopkins, Rome, Ga., assignor to Dexter Chemical Corporation, Bronx, N.Y.

Continuation of Ser. No. 243,799, Sep. 13, 1988, abandoned. This application Sep. 6, 1990, Ser. No. 580,364

Int. Cl.[5] D06P *5/00*

U.S. Cl. 8—477 6 Claims

1. A method for pigmenting fabric surfaces to achieve a predetermined nonuniformly colored appearance comprising the steps of

a. introducing fabric into a tumbling machine together with an effective amount of a pigment-containing foam composition, which foam composition comprises water, a dispersed pigment, and auxiliaries;

b. tumbling the fabric and foam composition in the tumbling machine for a period of time sufficient to pigment the surface of the fabric thereby creating the desired nonuniformly colored appearance;

c. extracting the excess foam composition from the tumbling machine;

d. removing the pigmented fabric from the tumbling machine and drying it to cure the pigmented surface;

e. washing the pigmented fabric in a detergent composition to remove unbound pigment; and

f. drying the pigmented fabric.

5,082,469

AMIDES OF POLYCARBOXYLIC ACIDS AS RHEOLOGICAL ADDITIVES FOR COAL-WATER SLURRIES

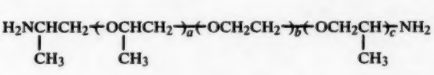
William S. Kain, and Donald D. Staker, both of Cincinnati, Ohio, assignors to Henkel Corporation, Ambler, Pa.

Continuation of Ser. No. 848,604, Apr. 7, 1986, abandoned. This application Jul. 28, 1988, Ser. No. 225,122

Int. Cl.[5] C10L *1/32*

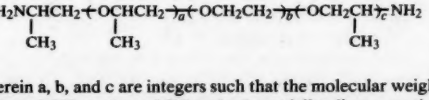
U.S. Cl. 44—280 16 Claims

1. A coal-water slurry containing 0.25 to 2.0 percent of a rheological additive consisting essentially of the reaction product obtained when approximately one-half to substantially all of the carboxyl groups of a dimer acid is reacted with a polyether diamine of the formula



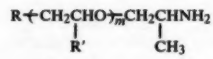
wherein a, b, and c are integers such that the molecular weight is about 2,000 to about 6,000.

9. A coal-water slurry containing 0.25 to 2.0 percent of a rheological additive consisting essentially of the reaction product obtained when approximately one-half to two-thirds of the carboxyl groups of a dimer acid is reacted with polyether diamine of the formula

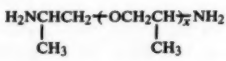


wherein a, b, and c are integers such that the molecular weight is about 2,000 to about 6,000 and substantially all or a portion of the remaining carboxyl groups are reacted with (1) an alkylamine selected from the group consisting of 2-ethylhexyla-

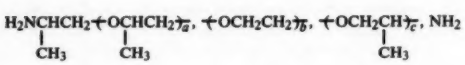
mine, dodecylamine, and N,N-dimethyl-1,3-diaminopropane; (2) a polyether monoamine of the formula



where R is a radical selected from the group consisting of n—$C_{10-12}H_{21-25}O$—,n—$C_4H_9OCH_2CH_2O$—, and $CH_3OCH_2CH_2O$—,R′ is hydrogen or methyl, and m is an integer such that the average molecular weight is in the range 300 to 1,000; (3) a polyether diamine of the formula



where x is an integer such that the average molecular weight is in the range 200 to 1,000; (4) a polyether diamine of the formula



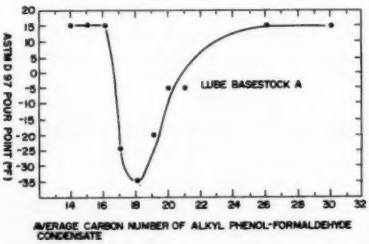
where a′,b′, and c′ are positive integers such that the average molecular weight is less than 1,000; (5) a hydroxylic compound selected from the group consisting of 2-ethylhexanol, n-decanol, and 2-ethyl-1,3-hexanediol; or (6) an alkanolamine selected from the group consisting of ethanolamine, diethanolamine, and N-aminoethanolamine.

5,082,470

ALKYL PHENOL-FORMALDEHYDE CONDENSATES AS FUEL ADDITIVES

David J. Martella, Princeton, and John J. Jaruzelski, Westfield, both of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 107,507, Oct. 8, 1987. This application Dec. 19, 1990, Ser. No. 630,062
Int. Cl.[5] C10C *1/18*
U.S. Cl. 44—304 **48 Claims**



1. A polymer composition capable of improving the low temperature flow properties of hydrocarbon oil comprising the condensation reaction product of reactants comprising alkylated phenol comprising at least 80 mole % difunctional alkylated phenol, and aldehyde wherein:

(a) said polymer composition has a number average molecular weight of at least about 3,000 and a molecular weight distribution of at least about 1.5;

(b) in said alkylated phenol reactant the alkyl groups: (i) are essentially linear; (ii) have between 6 and 50 carbon atoms; and (iii) have an average number of carbon atoms between about 12 and 26; and

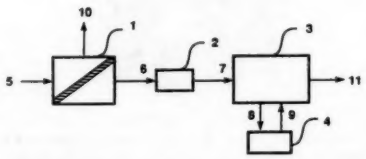
(c) not more than about 10 mole % of the alkyl groups on said alkylated phenol have less than 12 carbon atoms and not more than about 10 mole % of the alkyl groups on said alkylated phenol have more than 26 carbon atoms.

5,082,471

LIFE SUPPORT SYSTEM FOR PERSONNEL SHELTER

Amulya L. Athayde, Mountain View; Johannes G. Wijmans, Menlo Park, and Richard W. Baker, Palo Alto, all of Calif., assignors to Membrane Technology & Research, Inc., Menlo Park, Calif.

Filed Oct. 15, 1990, Ser. No. 597,714
Int. Cl.[5] B01D *53/04, 53/22*
U.S. Cl. 55—16 **19 Claims**



1. A process for supplying breathable air to a personnel shelter, comprising:

passing a stream of air containing a toxic agent across a permselective membrane having a feed side and a permeate side;

withdrawing from said permeate side a permeate stream enriched in oxygen and depleted in toxic agent compared to said stream of air;

passing said permeate stream into a sorbent unit containing a sorbent that can sorb said toxic agent;

withdrawing from said sorbent unit an oxygen-enriched air supply stream;

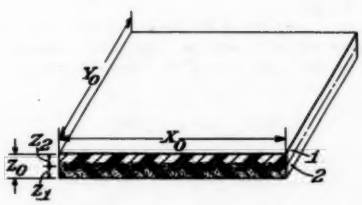
passing said air supply stream to said personnel shelter.

5,082,472

COMPOSITE MEMBRANE FOR FACILITATED TRANSPORT PROCESSES

Robert S. Mallouk, Box 332, R.D. #1, Chadds Ford, Pa. 19317; Phillip A. Branca, 118 Wyeth Way, Hockessin, Del. 19707, and Randal L. Perry, 100 Stokes Ct., Fayetteville, N.C. 28303

Filed Nov. 5, 1990, Ser. No. 608,907
Int. Cl.[5] B01D *53/22, 71/36*
U.S. Cl. 55—16 **21 Claims**



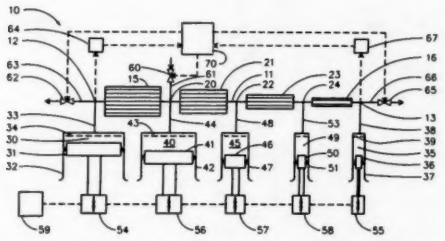
1. The method of use of a dimensionally stable, expanded polytetrafluoroethylene (EPTFE) and perfluoro ion exchange resin composite membrane in a facilitated transport unit operation, the method comprising chemically complexing a chemical species with another species and facilitating its transport across a composite membrane, said composite membrane comprising a continuous perfluoro ion exchange polymer layer in laminar attachment to a film of porous EPTFE, said perfluoro ion exchange layer being swollen with a hydrophilic liquid.

5,082,473

EXTRACTION AND CONCENTRATION OF A GAS COMPONENT

Bowie G. Keefer, 4324 West 11th Ave., Vancouver, Canada V6R 2M1

Filed Jul. 23, 1990, Ser. No. 557,132
Int. Cl.[5] B01D *53/04*
U.S. Cl. 55—25 **44 Claims**



1. A process for separating and concentrating first and second components of a feed gas mixture, the feed gas mixture having a feed concentration ratio between the first and second components, and one of the first and second components being more readily adsorbed under increase of pressure relative to the other component which is less readily adsorbed under increase of pressure over an adsorbent, such that a gas mixture of the first and second components contacting the adsorbent is relatively enriched in the first component at a first pressure and relatively enriched in the second component at a second pressure when the pressure is cycled between the first and second pressures at a cyclic frequency; providing for the process a flow path through a number "N" of at least two interconnected adsorbent beds in a working space within which the gas mixture has a working pressure, the flow path having first and second ends and at least one intermediate node including a first intermediate node, where each intermediate node is in the flow path between adjacent adsorbent bed segments, so that the flow path passes through a first adsorbent bed of the absorbent material in the flow path between the first end of the flow path and the first intermediate node, and through a second adsorbent bed in the flow path between the second end of the flow path and an intermediate node, which is the first intermediate node in the case that N=2; communicating within the working space a first space communicating with the first end of the flow path, a second space communicating with the second end of the flow path, and an intermediate space communicating with an intermediate node of the flow path; performing volume changes with an amplitude and phase at the cyclic frequency in each of the first space, second space, and intermediate space; and establishing a phase difference between the volume changes of the first and second space; and the process including the cyclically repeated steps at the cyclic frequency and in some sequence of:

(a) introducing the feed gas mixture to adjacent the first intermediate node of the flow path,

(b) changing the volume of the first space, the second space and the intermediate space, and establishing an amplitude and phase of the volume changes at the cyclic frequency in each of the first space, second space and intermediate space, so as to change the volume of the working space in order to change the working pressure between the first pressure and the second pressure,

(c) while the working pressure is substantially at the first pressure, so that the gas mixture contacting the adsorbent beds is relatively enriched in the first component, expanding the first space while contracting the second space; so as to generate flow in the flow path directed from the second space to the first space, to accumulate within the first space some gas enriched in the first component which has flowed into the first space from the first adsorbent bed, and also to purge the second adsorbent bed with gas which was in the second space,

(d) changing the volume of the working space in order to change the working pressure from substantially the first pressure to substantially the second pressure,

(e) while the working pressure is substantially at the second pressure, so that the gas mixture contracting the adsorbent beds is relatively enriched in the second component, expanding the second space while contracting the first space; so as to generate flow in the flow path directed from the first space to the second space, to communicate within the second space some gas enriched in the second component which has flowed into the second space from the second adsorbent bed, and also to purge the first adsorbent bed with gas which was in the first space,

(f) changing the volume of the working space in order to change the working pressure from substantially the second pressure to substantially the first pressure,

(g) withdrawing from adjacent the first end of the flow path a first product gas enriched in the first component,

(h) withdrawing from adjacent the second end of the flow path a second product gas enriched in the second component,

(i) controlling the withdrawal of the first and second product gases, so as to achieve high concentration and recovery of both the first component in the first product and the second component in the second product.

5,082,474

PRESSURIZATION PSA SYSTEMS FOR THE PRODUCTION OF HIGH PURITY PRODUCT GAS

Arthur I. Shirley, South Orange, and Alberto I. LaCava, South Plainfield, both of N.J., assignors to The BOC Group, Inc, Murray Hill, New Providence, N.J.

Filed Aug. 14, 1990, Ser. No. 567,487
Int. Cl.[5] B01D *53/04*
U.S. Cl. 55—26 **28 Claims**

1. A process for the production of a highly purified inert product gas from a feed gas containing said inert gas and impurities, comprising:

(a) pressurizing to a production pressure, a treatment zone comprising an inlet region, an outlet region, and at least one impurity adsorbing material, by

(i) first slowly introducing said feed gas for an initial period into said inlet region to raise the pressure of said treatment zone to an intermediate pressure less than said production pressure; subsequently

(ii) rapidly introducing the same or a different feed gas for a second period less than said initial period into said inlet region to raise the pressure of said treatment zone to said production pressure; and optionally

(iii) introducing the same or a different feed gas as in steps (i) and (ii) for a further period to raise further the pressure of said treatment zone;

(b) introducing the same or different feed gas to the production pressurized treatment zone through said inlet region to remove said impurities and to produce said highly purified inert product gas;

(c) removing said product gas from said outlet region.

5,082,475

WASTE AIR PURIFICATION PROCESS

Rolf Bentz, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 124,201, Nov. 23, 1987, abandoned. This application Apr. 25, 1989, Ser. No. 344,546
Claims priority, application Switzerland, Dec. 5, 1986, 4864/86
Int. Cl.[5] B01D *53/04*
U.S. Cl. 55—68 **21 Claims**

1. A process for the disposal and purification of waste air loaded with pollutants, which comprises passing said waste air

through a system consisting of at least one absorbent buffer and at least one biofilter, such that said pollutants are more or less uniformly released form said buffer into said biofilter.

5,082,476

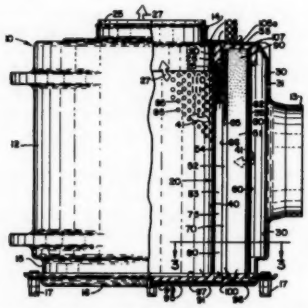
FILTRATION ARRANGEMENT AND METHOD

Brad E. Kahlbaugh, Roseville; Susan B. Reinhart, Minneapolis; Denis J. Dudrey, Bloomington, and John T. Herman, Dellwood, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Oct. 19, 1990, Ser. No. 601,242

Int. Cl.[5] B01D *46/10*

U.S. Cl. 55—97 **18 Claims**



1. A filter construction comprising:

(a) an upstream region of substantially constant density depth media having a percent solidity of no greater than about 3%; and

(b) a downstream region of gradient density depth media;

(i) said region of constant density depth media being constructed and arranged for operational loading therein of at least 65% by weight of retained solids within said filter construction; and

(ii) said region of gradient density depth media being constructed and arranged for operational loading therein of at least 50% by weight of retained solids not retained within said upstream region, but which are retained within said filter construction.

5,082,477

SEPARATOR FOR SEPARATING SOLIDS FROM AN ASCENDING, SOLIDS-LADEN GAS STREAM

Gerhard Thomas, and Walter Thielen, both of Gummersbach, Fed. Rep. of Germany, assignors to L & C Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

PCT No. PCT/EP89/00409, § 371 Date Nov. 26, 1990, § 102(e) Date Nov. 26, 1990, PCT Pub. No. WO89/10516, PCT Pub. Date Nov. 2, 1989

PCT Filed Apr. 15, 1989, Ser. No. 598,616

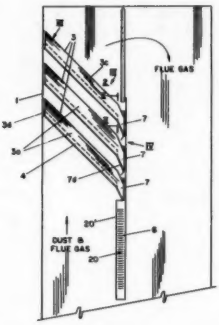
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1988, 3813054

Int. Cl.[5] B01D *45/00*

U.S. Cl. 55—443 **11 Claims**

1. In a separator for separating solids from a gas flow that contains solids and ascends in a channel delimited by multiple walls, said separator comprising at least two staggered layers of trapping chutes of an essentially U-shaped cross-section which trapping chutes are slanted towards one of said walls and open against a flow direction of said gas flow and have chute-shaped pockets provided at free ends of inner flanks, which chute-shaped pockets guide solids separated by said trapping chutes towards said one wall, the improvement wherein:

an outlet channel piece is provided at a lower end of each of said trapping chutes, said lower end facing said one wall, which outlet channel piece extends to said one wall and has a slot-shaped downwardly open outlet opening one side of which is delimited at said one wall; and, between each of said outlet channel pieces of each of said layers of trapping chutes, two sheet metal deflectors are provided



which are disposed above one another and are spaced from said one wall and from one another, whereby a slot for the passage of gas is formed.

5,082,478

PARTICULATE TRAP FILTER REGENERATIVE SYSTEM

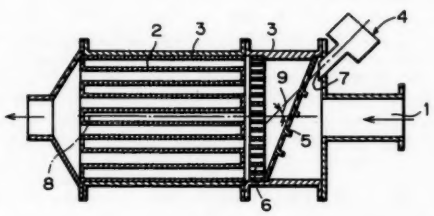
Michio Oono, and Meiro Nagata, both of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Oct. 3, 1990, Ser. No. 593,097

Claims priority, application Japan, Oct. 6, 1989, 1-118193[U]

Int. Cl.[5] F01N *3/02;* **B01D** *39/20*

U.S. Cl. 55—466 **8 Claims**



1. An exhaust gas particulate trap filter regenerative system comprising:

a cylindrical housing disposed in an exhaust pipe;

a particulate trap filter housed in the housing for collecting particulates of exhaust gas therein and having an upper flow side and a lower flow side, and a longitudinal axis; and

a burner disposed on the upper flow side of the filter for injecting a flame into the filter and burning off the particulates collected;

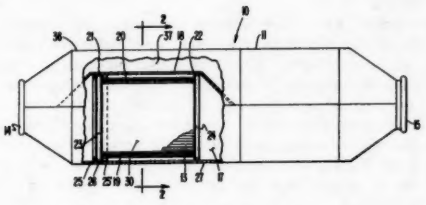
said particulate trap filter regenerative system being characterized in that said system further comprises a flame distributor provided with plural through holes between the particulate trap filter and the burner, and that the burner is installed in such a way that the flame injection axis thereof crosses with the extension line of the axis of the particulate trap filter at an angle of 35 to 55 degrees and said flame distributor is disposed in such a way that it crosses with the extension line of the axis of the particulate trap filter at an angle which is greater by 10 to 20 degrees than the flame injection angle of the burner.

5,082,479

DIESEL PARTICULATE TRAP MOUNTING SYSTEM

Paul R. Miller, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jul. 16, 1990, Ser. No. 552,460
Int. Cl.[5] F01N *3/02*
U.S. Cl. 55—523 19 Claims



1. A particulate trap assembly comprising:

(a) an outer housing having a gas inlet and a gas outlet and a passageway interconnecting said gas inlet and said gas outlet;

(b) a particulate trapping means located within said passageway of said housing for trapping particles entrained in gas passing through said passageway, said passageway and said particulate trapping means having circumferential extents which fall within relatively large predetermined manufacturing tolerances respectively;

(c) tourniquet means surrounding said particulate trapping means for applying a predetermined radial pressure to said trapping means which is substantially independent of the circumferential extents of said passageway and said including an encircling element having a selectably adjustable circumferential extent for permitting said tourniquet means to conform to the circumferential extent of said particulate trapping means when mounted in compressive relationship about said particulate trapping means, said encircling element including opposed ends adjustable circumferentially relative to one another for adjusting said adjustable circumferential extent to obtain said predetermined radial pressure, said tourniquet means having securing means for holding said ends in a fixed position relative to one another corresponding to the application of said predetermined radial pressure on said particulate trapping means; and

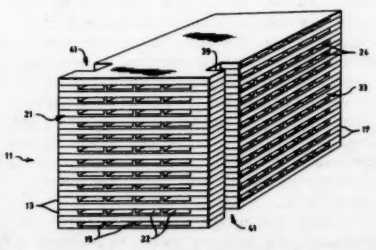
(d) mounting means for retaining said particulate trapping means radially and axially within said passageway in a manner which imposes no further substantial radial compressive force to said particulate trapping means.

5,082,480

CERAMIC FILTER

Raymond E. Dorazio, Wysox, Pa., assignor to GTE Products Corporation

Filed Dec. 24, 1990, Ser. No. 632,796
Int. Cl.[5] B01D *46/00*
U.S. Cl. 55—523 4 Claims



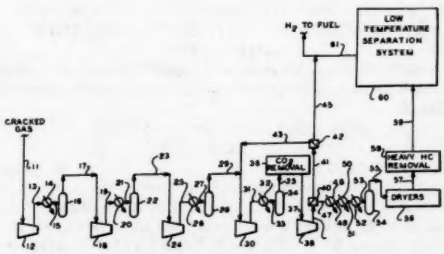
1. A cordierite ceramic filter structure having rectangular shaped opposite ends and sides extending intermediate said ends and adjacent thereto, said filter structure having a plurality of clean gas channels forming outlets at one end thereof, said one end including a flange for mounting said ceramic filter structure in a housing, a plurality inlet channels forming inlets on one said side for gas to be filtered, and thin porous sections separating said inlet channels from said outlet channels for removing particulate from said gas to be filtered, said filter structure comprising a plurality of stacked rectangular shaped ceramic filter elements, each of said elements consisting of magnesium aluminum silicate having the composition in weight percent within the range of about 13 to 16 weight percent MgO, 30 to 36 weight percent Al_2O_3 and 49 to 54 percent SiO_2, each of said elements comprising a pair of marginal side portions extending lengthwise and a plurality of lengthwise extending ribs intermediate said pair of marginal side portions, said thin porous sections joining and extending between said respective ribs and said marginal side portions, said elements being stacked in an alternating manner whereas said ribs of alternate elements are at right angles whereby said inlet channels cross with said outlet channels, said marginal sections on opposite sides extending lengthwise and having a serrated surface for bonding to an adjacent element of substantially uniform width of greater than about 1 inch, each of said side surfaces having a vertically extending notch forming said flange for mounting said filter structure in a housing whereby a unitary filter structure is formed having said inlets and outlets for respective dirty and clean gases.

5,082,481

MEMBRANE SEPARATION PROCESS FOR CRACKED GASES

Richard K. Barchas, and Thomas P. Hickey, both of Houston, Tex., assignors to Lummus Crest, Inc., Bloomfield, N.J.

Filed Apr. 10, 1990, Ser. No. 506,719
Int. Cl.[5] F25J *3/06*
U.S. Cl. 62—23 15 Claims



1. A process for recovering hydrogen, carbon dioxide, and water from a cracking effluent containing at least one olefin, comprising:

compressing said cracking effluent in at least one compression stage;

separating at least a portion of the hydrogen, carbon dioxide, and water from the compressed cracking effluent prior to refrigerating said cracking effluent to separate low-boiling components; and

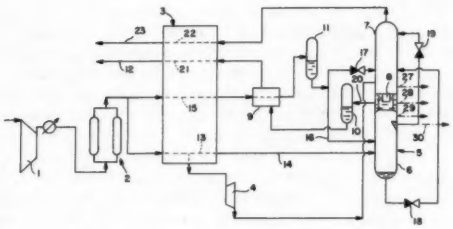
subsequently cooling the effluent to effect low temperature separation of low-boiling components.

5,082,482

PROCESS AND APPARATUS FOR THE PRODUCTION OF GASEOUS OXYGEN WITH A VARIABLE FLOW BY AIR DISTILLATION

Bernard Darredeau, Sartrouville, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Sep. 18, 1990, Ser. No. 584,241
Claims priority, application France, Oct. 9, 1989, 89 131159
Int. Cl.[5] F25J *3/02*
U.S. Cl. 62—24 **8 Claims**



1. An air distillation process for producing gaseous oxygen at variable flow rates which comprises the following steps:

providing a first stream of air under pressure at a variable selected flow rate;

dividing the first stream into a second and a third stream;

the second and third streams in a first heat exchanger;

forwarding the cooled second stream of air to a distillation column;

passing the cooled third stream of air through a second exchange for liquefaction and collecting the resulting liquid air in a first storage tank;

supplying at a constant flow rate liquid air withdrawn from the first storage tank to the distillation column;

withdrawing at a constant flow rate liquid oxygen from the distillation column and feeding it to a second storage tank;

withdrawing liquid oxygen from the second storage tank at a variable flow rate depending upon demand;

vaporizing the withdrawn oxygen in the second heat exchanger; and

warming the vaporized oxygen in the first exchanger for distribution.

5,082,483

ENCLOSURES FOR SLAG PELLETIZATION APPARATUS AND METHOD OF OPERATION THEREOF

Kenneth W. Spencer, Ancaster, and David T. Horvat, Hamilton, both of Canada, assignors to National Slag Limited, Hamilton, Canada

Filed Jun. 8, 1990, Ser. No. 535,613
Int. Cl.[5] C03B *37/005*
U.S. Cl. 65—19 **16 Claims**

1. A slag pelletization enclosure in combination with rotary pelletization apparatus of the type with which a stream of slag material to be pelletized is thrown into the ambient air as a shower thereof for a sufficient distance for it to separate and cool and to produce a pile of self-sustaining pelletized material on the ground within the enclosure, the enclosure enabling the removal from the enclosure interior atmosphere of water soluble gases and airborne particulate material created during the process of operation of the pelletization apparatus, the enclosure interior having successive first, second and third zones and the enclosure comprising:

air impermeable walls and a roof forming a unitary enclosure interior of sufficient size to comprise at least the first and second zones and enclose at least one rotary pelletizer, the shower or showers of molten slag projected therefrom, and the resultant pile of pelletized material, one of the enclosure walls having a closable opening for removal of pelletized material from the enclosure interior;

the first zone having therein said at least one rotary pelletizer, means for feeding molten slag material to be pelletized thereto, and controllable water supply means for supplying first zone pelletization water to the slag material prior to its pelletization in an amount and at a rate sufficient to convert it to a pyroplastic state suitable for pelletization;

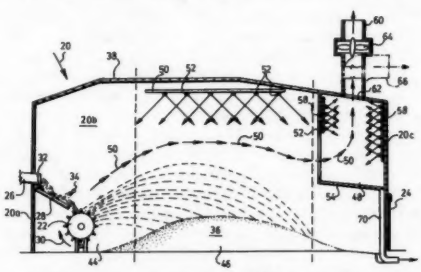
the second zone being adapted to contain the shower of pelletizing slag material and the pile of pelletized material and having therein below the roof a plurality of second zone water supply nozzles for supplying second zone water to the upper part of the second zone to cool gases passing therethrough by use of the latent heat of evaporation of the second zone water, the second zone nozzles supplying the second zone water in a particle size such that all of the water thus supplied can be vapourised in the zone;

controllable water supply means connected to the second zone nozzles and controllable to supply second zone water thereto in a quantity such that all of the water thus supplied can be vapourised in the second zone;

whereby the gases and entrained water vapour in the second zone are cooled to a temperature above that of condensation of the water; and

the third zone having therein third zone water supply means supplying third zone water to the zone to further cool the gases passing therethrough;

controllable water supply means connected to the third zone



water supply means and controllable to supply third zone water thereto in a quantity and at a rate such that the gases are cooled below the condensation temperature thereof;

an exit from the enclosure interior for non-condensible gases; and

an exit from the enclosure interior for condensed water with any particulate material entrained therein.

9. A method of operating a slag pelletization enclosure for pelletization apparatus enabling the removal from the enclosure atmosphere of water soluble gases and airborne particulate material created during the process of operation of the pelletization apparatus to produce within the enclosure a pile of slag pellets:

the enclosure having successive first, second and third zones and comprising air impermeable walls and a roof, one of the enclosure walls having a closable opening for removal of pelletized material from the enclosure interior;

the first zone having therein a pelletizer, means for feeding molten slag material to be pelletized thereto, and controllable water supply means for supplying first zone pelletization water to the slag prior to its pelletization;

the second zone containing the pile of slag pellets and having therein controllable water supply means for supplying second zone water to the zone to cool gases passing therethrough by use of the latent heat of evaporation of the second zone cooling water; and

the third zone having therein controllable water supply means supplying third zone water to the zone to further cool the gases passing therethrough;

an exit from the enclosure interior for non-condensible gases; and

an exit from the enclosure interior for condensed water with any particulate material entrained therein;

the method including the steps of:

supplying molten slag to the pelletization apparatus and operating it to pelletize the molten slag and produce the pile of pelletized material;

supplying the first zone water to the slag in the first zone in an amount and at a rate sufficient to convert it to a pyroplastic state suitable for pelletization;

supplying the second zone water to the second zone in a quantity, at a rate, and in a particle size such that all of the water thus supplied is vapourised in the zone and the gases and entrained water vapour are cooled to a temperature above that of condensation of the water;

supplying the third zone water to the third zone in a quantity and at a rate such that the gases are cooled below the condensation temperature thereof; and

removing from the third zone the resultant non-condensible gases and condensed water.

5,082,484

APPARATUS FOR MAKING QUARTZ GLASS CRUCIBLES

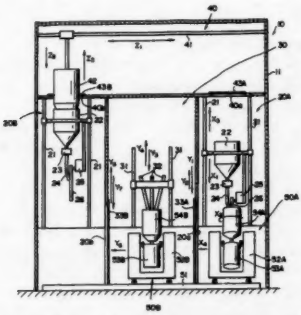
Tadao Koseki; Akihiko Koseki; Kohichi Hirata, and Haruhiko Itoh, all of Oguni, Japan, assignors to Toshiba Ceramics Co., Ltd., Japan

Filed Sep. 17, 1990, Ser. No. 583,553

Claims priority, application Japan, Sep. 25, 1989, 1-248597

Int. Cl.[5] C03B *19/06*

U.S. Cl. 65—144 **16 Claims**



1. An apparatus for making a quartz glass crucible, comprising:

a housing having wall means dividing said housing into a first chamber and a second chamber;

a rotation crucible having an inner surface corresponding in configuration to the quartz glass crucible;

rotation means for rotating the rotation crucible;

reciprocating means for reciprocably shifting the rotation crucible and the rotating means together between the first and

access means including an opening in said wall means for permitting said rotation crucible together with said rotation means to pass between said first and second chambers and movable cover means for covering and uncovering said opening responsive to the reciprocating movement of said rotation crucible together with said rotation means;

feed means mounted in the first chamber for feeding a particulate material into the rotation crucible;

tool means mounted in said first chamber for shaping the particulate material in the rotation crucible so as to form a shaped body in the shape of the quartz glass crucible as the rotation crucible rotates; and

heating means mounted in said second chamber for heating and fusing the shaped body within the rotation crucible so as to make the quartz glass crucible.

5,082,485

TREATMENT AND PREVENTION FOR OAK WILT DISEASE OR DECLINE

David W. Evans, 603 Mill Run, Kerrville, Tex. 78028

Continuation-in-part of Ser. No. 150,692, Jan. 29, 1988, abandoned. This application Oct. 5, 1988, Ser. No. 253,790

Int. Cl.[5] A01N *59/02, 33/18*

U.S. Cl. 71—3 **21 Claims**

1. A fungicidal mixture designed to be applied around the base of a tree for treating oak wilt disease or decline caused by the fungus *Ascomycete Ceratocystis Fagacearum* in trees, comprising the ingredients sulfur and pentachloronitrobenzene, each ingredient being present in an amount effective to treat said disease.

5,082,486

PROCESS FOR PREPARING ORGANIC COMPOST FROM MUNICIPAL REFUSE

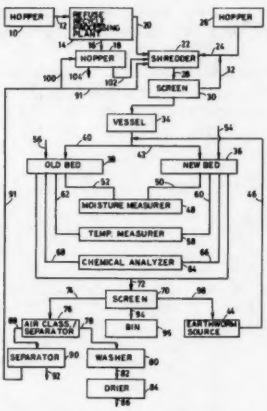
Mark E. Glogowski, 1498 Lake Rd., Hamlin, N.Y. 14464

Continuation-in-part of Ser. No. 269,499, Nov. 10, 1988, Pat. No. 4,971,616, which is a continuation-in-part of Ser. No. 35,913, Apr. 8, 1987, abandoned. This application Nov. 16, 1990, Ser. No. 614,262

The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.

Int. Cl.[5] C05F *9/04, 13/00*

U.S. Cl. 71—9 **19 Claims**



1. A process for preparing an organic compost material with a water content of from about 45 to about 92 weight percent, a carbon content of from about 27 to about 85 weight percent (by weight of dry compost material), a pH of from about 6.2 to about 8.0, and a particle size distribution such that substantially zero percent of the particles in the compost material are greater than about 2.0 inches, from about 0.5 to about 35 weight percent of the particles in the compost material are greater than 1.0 inch, from about 0.5 to about 35 percent of the particles in the compost material are less than 1.0 inch but greater than 0.25 inches, and at least about 50 weight percent of the particles in the compost material are smaller than about 0.25 inches, comprising the steps of:

(a) providing a shredded refuse material, wherein:

1. said shredded material has a particle size such that substantially all of its particles are smaller than 5.0 inches;

2. said shredded material is comprised of from about 5 to about 96 weight percent of a cellulosic material selected

from the group consisting of alpha-cellulose, beta-cellulose, gamma-cellulose, and mixture thereof; and

3. at least about 20 weight percent of said cellulosic material in said shredded material is wood cellulose with a degree of polymerization of less than about 900;

(b) adding a sufficient amount of water to said shredded refuse material to saturate it with water;

(c) providing an earthworm material which is a mixture of earthworm castings and a material selected from the group consisting of earthworms, earthworm eggs, and mixtures thereof;

(d) contacting said saturated shredded refuse material with said earthworm material to form a compostable mass of material which consist from about 20 to about 2,000 pounds of earthworm castings and from about 1 to about 100 pounds of earthworm material selected from the group consisting of earthworms, earthworm eggs, and mixtures thereof, for each ton of saturated, shredded refuse material in said compostable mass;

(e) for at least about the first thirty days after said compostable mass has been formed, maintaining the water content in said compostable mass at a concentration of at least about 80 percent by adding water to said compostable mass; and

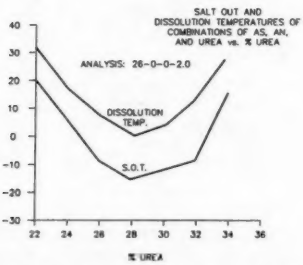
(f) subjecting said compostable mass to a temperature of from about 0 to about 54 degrees centigrade while maintaining the water content in said compostable mass at a concentration of from about 45 to about 92 weight percent for from about 4 to about 8 months.

5,082,487

SOLUTIONS OF AMMONIUM SULFATE, AMMONIUM NITRATE AND UREA, WITH HIGH NITROGEN AND SULFUR CONTENT, HAVING LOW SALT-OUT TEMPERATURES

Richard E. Mayer, Richmond, Va., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Apr. 11, 1988, Ser. No. 179,820
Int. Cl.[5] C05C *9/00*
U.S. Cl. 71—30 **4 Claims**


SALT OUT AND DISSOLUTION TEMPERATURES OF COMBINATIONS OF AS, AN, AND UREA vs. % UREA
ANALYSIS: 26-0-0-2.0
DISSOLUTION TEMP.
S.O.T.
% UREA

1. The method to achieve a lower salt-out temperature than at nominal 1.29 ammonium nitrate to urea weight ratios, with enhanced food value at an economical cost for liquid fertilizer comprising water, urea, ammonium sulfate and ammonium nitrate, said method consisting of preparing a solution of said urea, ammonium sulfate and ammonium nitrate in water using a maximum possible weight percent urea of between about 24 and 30%, a nitrogen to sulfur ratio of between about 8.3 and 6.8 and an ammonium nitrate to urea ratio of between about 1.23 and 0.72 and within and between the following relationships,

urea wt. %	ratio of nitrogen to sulfur	ratio of ammonium nitrate to urea
26–30	8.3	0.82 to 1.15
24–30	8	0.72 to 1.23
28–30	7.1	0.77 to 0.92

-continued

urea wt. %	ratio of nitrogen to sulfur	ratio of ammonium nitrate to urea
24–30	6.8	0.72 to 1.23

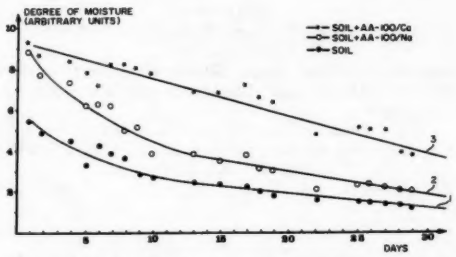
so that the resulting salt-out temperature is between about −4° to 25° F. (−20° to −6° C.).

5,082,488

SOIL CONDITIONING

Raymond L. Van Mao, 1172 Alexis-Nihon, Ville St-Laurent, Quebec, Canada H4R 1S2

Filed Jun. 20, 1990, Ser. No. 540,782
Int. Cl.[5] C05G *3/06;* **C05D** *5/00, 9/00*
U.S. Cl. 71—62 **5 Claims**



1. A method of enhancing the water-retention capacity of a soil and providing plant nutrients to the soil over an extended period of time, said method comprising, admixing the soil with from 2 to 30% by weight of a chryso-zeolite of type A and/or type X having a silica content of 35 to 60% by weight, a MgO content of 0.1 to 10% by weight, a Fe_2O_3 content of 0.1 to 2.5% by weight, an Al_2O_3 content from 10 to 45% by weight and containing from 10 to 25% by weight of CaO or CaO and $(NH_4)_2O$, all the oxide contents being determined on the dried oxide basis, said chryso-zeolite having a BET surface area higher than 400 m^2/g and a pore size distribution which comprises from 10% to 20% based on the surface area, of pores whose diameter is larger than 17 angstroms.

5,082,489

COMPOSITION FOR BIOCONTROL OF WILD BUCKWHEAT

Alan K. Watson, Pincourt, and Lee A. Wymore, Ste-Anne-de-Bellevue, both of Canada, assignors to The Royal Institution for the Advancement of Learning (McGill University), Montreal, Canada

Filed Feb. 6, 1990, Ser. No. 475,954
Int. Cl.[5] A01N *37/10*
U.S. Cl. 71—79 **7 Claims**

1. A method for controlling growth of *Polygonum convolvulus* weeds in agricultural crops which method comprises applying to said weeds or to the locus of said weeds an effective amount of the fungus Phoma sp. having the culture deposit No. ATCC 20982, in combination with a chemical herbicide selected from the group consisting of dicamba and MCPA, to effect and produce typical lesions in said weeds so as to inhibit the growth of or kill said weeds.

5,082,490

HERBICIDAL SUBSTITUTED 4,5-DIAMINO-1,2,4-TRIAZOL-3-(THI)ONES

Klaus-Helmut Müller, Düsseldorf; Kurt Findeisen, Leverkusen; Michael Haug, Bergisch-Gladbach; Ulrich Heinemann, Leichlingen; Joachim Kluth, Langenfeld; Klaus König, Odenthal; Hans-Joachim Santel, Leverkusen; Klaus Lürssen, and Robert R. Schmidt, both of Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

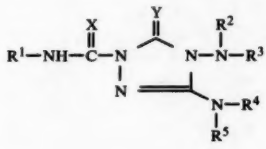
Filed Aug. 9, 1990, Ser. No. 565,293

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1989, 3928662

Int. Cl.[5] A01N *43/653;* C07D *249/12*

U.S. Cl. 71—92 10 Claims

1. A substituted 4,5-diamino-1,2,4-triazol-3-(thi)one of the formula



(I)

in which

R^1 represents hydrogen, or represents in each case straight-chain or branched alkyl having 1 to 18 carbon atoms, alkenyl having 2 to 8 carbon atoms, alkinyl having 2 to 8 carbon atoms, halogenoalkyl having 1 to 8 carbon atoms and 1 to 17 identical or different halogen atoms, halogenoalkenyl having 2 to 8 carbon atoms and 1 to 15 identical or different halogen atoms, or halogenoalkinyl having 2 to 8 carbon atoms and 1 to 13 identical or different halogen atoms, cyanoalkyl having 1 to 8 carbon atoms or hydroxyalkyl having 1 to 8 carbon atoms and 1 to 6 hydroxyl groups, or represents phenoxyalkyl having 1 to 4 carbon atoms in the alkyl moiety, alkoxyalkyl, alkoxycarbonylalkyl or alkoxycarbonylalkenyl, in each case having up to 6 carbon atoms in the individual alkyl or alkenyl moieties, or alkylaminoalkyl or dialkylaminoalkyl, in each case having 1 to 6 carbon atoms in the individual alkyl moieties, or represents cycloalkyl, cycloalkylalkyl, cycloalkenyl or cycloalkenylalkyl, each of which has 3 to 8 carbon atoms in the cycloalkyl or cycloalkenyl moiety and where appropriate 1 to 6 carbon atoms in the alkyl moiety and each of which is optionally monosubstituted to trisubstituted by identical or different substituents selected from the group consisting of halogen, cyano, straight-chain or branched alkyl or halogenoalkyl, in each case having 1 to 4 carbon atoms and where appropriate 1 to 9 identical or different halogen atoms, and straight-chain or branched halogenoalkenyl having up to 4 carbon atoms and 1 to 5 identical or different halogen atoms, and in each case double-linked alkanediyl or alkenediyl, in each case having up to 4 carbon atoms; R^1 furthermore represents in each case straight-chain or branched alkoxy having 1 to 8 carbon atoms, alkenyloxy having 2 to 8 carbon atoms or alkinyloxy having 2 to 8 carbon atoms, or represents aralkyl, aroyl, aryl, aralkyloxy or aryloxy, each of which has 6 to 10 carbon atoms in the aryl moiety and where appropriate 1 to 8 carbon atoms in the straight-chain or branched alkyl moiety and each of which is optionally monosubstituted to trisubstituted by identical or different substituents, the alkyl substituents being selected from the group consisting of halogen and cyano, and the aryl substitutents being selected from the group consisting of halogen, cyano, nitro, hydroxyl, straight-chain or branched alkyl, alkoxy, alkylthio, halogenoalkyl, halogenoalkoxy, halogenoalkylthio, alkylsulphinyl, alkylsulphonyl, halogenoalkylsulphinyl, halogenoalkylsulphonyl, alkanoyl and alkoxycarbonyl, in each case having 1 to 6 carbon atoms in the alkyl moiety and, where appropriate, 1 to 9 identical or different halogen atoms, and cycloalkyl having 3 to 6 carbon atoms, and phenoxy; or R^1 represents benzyl with an —O—CH_2—O— group fused to the phenyl moiety,

R^2, R^3, R^4 and R^5 are identical or different and independently of one another represent hydrogen, or represent in each case straight-chain or branched alkyl having 1 to 8 carbon atoms, alkenyl having 2 to 8 carbon atoms, alkinyl having 2 to 8 carbon atoms, halogenoalkyl having 1 to 8 carbon atoms and 1 to 17 identical or different halogen atoms, halogenoalkenyl having 2 to 8 carbon atoms and 1 to 15 identical or different halogen atoms, or halogenoalkinyl having 2 to 8 carbon atoms and 1 to 13 identical or different halogen atoms, cyanoalkyl having 1 to 8 carbon atoms, or alkoxyalkyl or alkylthioalkyl, in each case having up to 4 carbon atoms in the individual alkyl moieties, or represent cycloalkyl or cycloalkylalkyl, each of which has 3 to 8 carbon atoms in the cycloalkyl moiety and, where appropriate, 1 to 6 carbon atoms in the alkyl moiety and each of which is optionally monosubstituted to trisubstituted by identical or different substituents selected from the group consisting of halogen, cyano, straight-chain or branched alkyl or halogenoalkyl, in each case having 1 to 4 carbon atoms and, where appropriate, 1 to 9 identical or different halogen atoms, the radicals R^2 to R^5 furthermore represent aryl or aralkyl, each of which has 6 to 10 carbon atoms in the aryl moiety and, where appropriate, 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety and each of which is optionally monosubstituted to trisubstituted by identical or different substituents selected from the group consisting of halogen, cyano, nitro, hydroxyl, straight-chain or branched alkyl, alkoxy, alkylthio, halogenoalkyl, halogenoalkoxy, halogenoalkylthio, alkylsulphinyl, alkylsulphonyl, halogenoalkylsulphinyl, halogenoalkylsulphonyl, alkanoyl and alkoxycarbonyl, in each case having 1 to 6 carbon atoms in the alkyl moiety and, where appropriate, 1 to 9 halogen atoms, and R^5 can also represent straight-chain or branched alkoxy having 1 to 8 carbon atoms,

X represents oxygen or sulphur and

Y represents oxygen or sulphur.

5,082,491

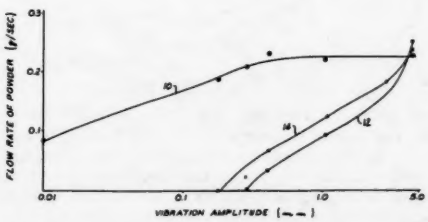
TANTALUM POWDER WITH IMPROVED CAPACITOR ANODE PROCESSING CHARACTERISTICS

Carlos F. Rerat, Muskogee, Okla., assignor to V Tech Corporation, Japan

Division of Ser. No. 413,957, Sep. 28, 1989, Pat. No. 4,968,481. This application Sep. 6, 1990, Ser. No. 578,192

Int. Cl.[5] B22F *9/00*

U.S. Cl. 75—255 15 Claims



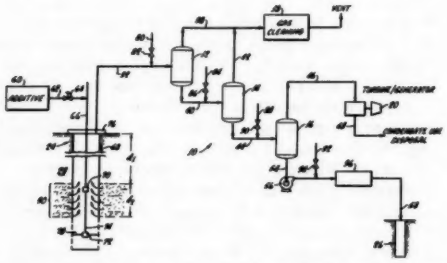
1. An agglomerated tantalum powder having a screen size distribution of minus 60 mesh to plus 400 mesh containing less than 5 weight percent of minus 400 mesh material.

5,082,492

RECOVERY OF PRECIOUS METALS FROM AQUEOUS MEDIA

Darrell L. Gallup, Chino Hills; John L. Featherstone; Jessie P. Reverente, both of El Centro, and Philip H. Messer, Palm Desert, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed May 1, 1989, Ser. No. 345,167
Int. Cl.[5] C22B *3/44*
U.S. Cl. 75—712 54 Claims



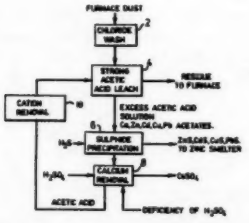
1. A method for treating a feed brine containing suspended and dissolved scale forming constituents, at least some of which comprise silicon containing components and some of which comprise one or more recoverable metals selected from the group consisting of copper and metals below copper in the electromotive series, said method comprising passing the brine at an elevated temperature and pressure and a pH below about 5.0 through a conduit packed with one or more metals higher in the electromotive series than copper for a time sufficient for a substantial portion of the recoverable metals and a substantial portion of the silicon-containing scale components to precipitate onto said packing, with the brine received from said packed conduit containing.

5,082,493

PROCESSING OF CARBON STEEL FURNACE DUSTS

Everett C. Barrett, Richmond Hill, and Emil H. Nenniger, Oakville, both of Canada, assignors to Hatch Associates Ltd., Toronto, Canada

Continuation-in-part of Ser. No. 539,593, Jun. 18, 1990. This application Apr. 26, 1991, Ser. No. 691,792
Int. Cl.[5] C22B *5/00*
U.S. Cl. 75—743 7 Claims



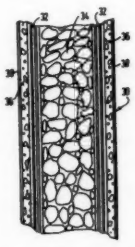
1. A method of processing carbon steel furnace dusts comprising the steps of subjecting the dusts to leaching by acetic acid of sufficient concentration substantially to dissolve leachable zinc and heavy metal values including lead into acetic acid solution, separating undissolved iron-containing residues, treating the acetic acid solution with hydrogen sulphide to precipitate zinc and other heavy metal sulphides and regenerate acetic acid, removing the sulphides, and treating the acetic acid solution with only sufficient sulphuric acid to precipitate most calcium present as calcium sulphate and regenerate further acetic acid without leaving significant levels of sulphate ions in solution, the acetic acid solution being returned to the leaching step.

5,082,494

MATERIALS FOR AND MANUFACTURE OF FIRE AND HEAT RESISTANT COMPONENTS

Geoffrey Crompton, Southport, England, assignor to Crompton Design Manufacturing Limited, Southport, England

Filed Dec. 5, 1988, Ser. No. 280,019
Claims priority, application United Kingdom, Dec. 16, 1987, 8729303
Int. Cl.[5] C09D *5/16*
U.S. Cl. 106—18.12 16 Claims



1. A method for the manufacture of fire and heat resistant molded components from a composition comprising a liquid binder and a foamed filler, said method comprising adding to said composition additives comprising a first frit having a relatively low melting point and at least one other frit having a melting point higher than said first frit, said frits being capable of melting progressively in the range from 300 to 800 degrees C.

5,082,495

INK COMPOSITION

Zenshiro Iijima, Abiko, Japan, assignor to Adger Kogyo Co., Ltd., Japan

Filed Apr. 2, 1990, Ser. No. 502,938
Claims priority, application Japan, Apr. 21, 1989, 1-103204
Int. Cl.[5] C09D *11/00*
U.S. Cl. 106—21 8 Claims

1. A substantially colorless, transparent ink composition comprising:

(a) an organic solvent;

(b) salicyclic acid or acetylsalicyclic acid dissolved in said organic solvent in an amount of at least 15% based on the total weight of said organic solvent said salicyclic acid or acetylsalicyclic acid; and

a polymer which is dissolved in said organic solvent and which has a molecular weight of at least 10,000, said ink composition turning white upon use.

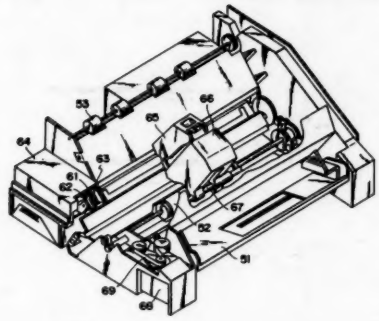
5,082,496

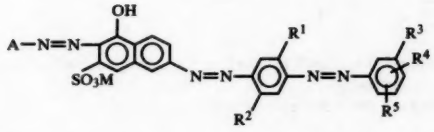
INK, AND INK-JET RECORDING METHOD AND APPARATUS EMPLOYING THE INK

Takao Yamamoto, Isehara; Tsuyoshi Eida, Yokohama, and Mayumi Yamamoto, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1991, Ser. No. 651,203
Claims priority, application Japan, Feb. 9, 1990, 2-30663; Dec. 28, 1990, 2-408934
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—22 5 Claims

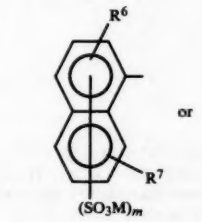
1. An ink comprising a recording agent and a liquid medium for dissolution or dispersion thereof, the recording agent being a compound represented by the general formula



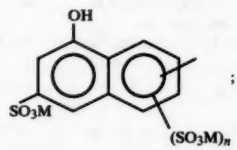


(I)

wherein R^1 and R^2 are respectively a radical selected from the group of lower alkyl, lower alkoxy, —NHCOCH$_3$, —COOM, and —SO$_3$M; R^3, R^4, and R^5 are respectively a radical selected from the group of hydrogen, hydroxyl, lower alkyl, lower alkoxy, amino, —SO$_3$M, and —COOM; A is



or



;

R^6 and R^7 are respectively a radical selected from the group of hydrogen, hydroxyl, and lower alkoxy; m is 1 or 2; n is 0 or 1; and M is alkali metal or ammonium.

5,082,497

SOLUTION ROSIN RESINATE FOR PUBLICATION GRAVURE INKS

Joseph W. LeVine, Panama City, Fla., assignor to Westvaco Corporation, New York, N.Y.

Filed Sep. 24, 1990, Ser. No. 586,673

Int. Cl.[5] C09D *11/08*

U.S. Cl. 106—30 **39 Claims**

1. A printing ink composition comprising, a vehicle containing a binder dissolved in a hydrocarbon solvent and a pigment dispersed therein, wherein said binder comprises a modified rosin resinate prepared by reacting rosin in a molten state with a dienophile selected from the group consisting of fumaric acid, maleic acid, acrylic acid, methacrylic acid, citraconic acid, itaconic acid, and maleic anhydride to form a rosin adduct, and reacting said rosin adduct with a reactive compound of a metal belonging to Group I of the Periodic Table and a reactive compound of metals selected from the group consisting of zinc, calcium, and mixtures thereof dissolved in a hydrocarbon solvent.

5,082,498

HIGHLY CONCENTRATED SOLID PIGMENT FORMULATIONS

Walter Kurtz, Bad Duerkheim; Karl Muench, Beindersheim; Joachim Kranz, and Horst Belde, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 29, 1990, Ser. No. 529,437

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1989, 3920251

Int. Cl.[5] C08K *13/08*

U.S. Cl. 106—499 **9 Claims**

1. A solid pigment formulation containing from 70 to 97% by weight, based on the total weight of the formulation, of one or more pigments and also from 3 to 30% by weight, based on the total weight of the formulation, of at least one surfactant which is an adduct of ethylene oxide and optionally propylene oxide with ethylenediamine, the proportion of ethylene oxide being from 46 to 100% by weight, based on the total weight of ethylene oxide and propylene oxide in the adduct, and the adduct having an average molecular weight of from 5000 to 40,000.

5,082,499

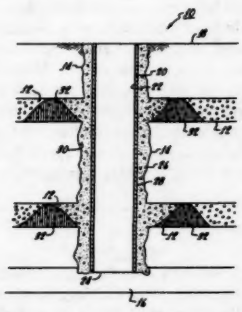
WELL PREFLUSH FLUID

Jian-Chyun Shen, Irvine, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 317,004, Feb. 28, 1989. This application Dec. 28, 1989, Ser. No. 458,074

Int. Cl.[5] C04B *7/21*

U.S. Cl. 106—735 **20 Claims**



1. A preflush fluid for preventing lost circulation during the cementing of a well, the fluid consisting essentially of:

(a) water;

(b) about 10 to about 30 percent by weight of water (% BWOW) cement;

(c) about 5 to about 30% BWOW calcium sulfate selected from the group consisting of calcium sulfate hemihydrate, calcium sulfate dihydrate, and mixtures thereof; and

(d) an alkali metal-containing quick-hardening accelerator.

5,082,500

SPRAYABLE COMPOSITION

Thomas Nachtman, Temperance; John Hull, Toledo, and Patrick O'Shea, Hanover, all of Mich., assignors to Newastecon, Inc., Perrysburg, Ohio

Continuation-in-part of Ser. No. 350,599, May 10, 1989, abandoned. This application Jan. 10, 1991, Ser. No. 639,285

Int. Cl.[5] C09J *4/00*

U.S. Cl. 106—900 **34 Claims**

1. A sprayable composition for forming a cover layer over a selected material, the composition having protective layer forming ingredients, in approximate pounds, consisting essentially of:

(a) 5 to 50 pounds of a water soluble cellulosic polymer that, after spraying, becomes water repellent;

(b) 25 to 200 pounds of a clay;

(c) 10 to 100 pounds of fibrous material; and

(d) 2000 to 8000 pounds of water as a carrier for the polymer, clay, and the fibrous material, the composition, after spraying, becoming water-resistant, tough and flexible.

5,082,501

METHOD OF PREPARING BUILDING MATERIALS

Fredrik W. A. Kurz, Nysatravagen 12, S-181 61 Lidingo, Sweden

Continuation of Ser. No. 569,227, Aug. 17, 1990, which is a continuation of Ser. No. 344,208, Apr. 27, 1989, abandoned, which is a continuation-in-part of Ser. No. 71,794, Jun. 11, 1987, abandoned. This application Nov. 9, 1990, Ser. No. 611,450

Int. Cl.[5] C04B *7/153*

U.S. Cl. 106—789 **16 Claims**

1. In a method of making a building material by activation of latently hydraulic ground granulated amorphous basic blast-furnace slag to form a direct acting hydraulic binder, wherein the method comprises mixing the slag, with water, sand, gravel, and an activator, said slag, water, sand, gravel and activator being present in amounts effective to enable the slag to react chemically with the water, in combination with the sand and gravel, to produce a concrete of desired strength, the improvement comprising forming the activator as a combination of an acidic component and a basic component, said acidic component being a phosphate or mixture of phosphates in an amount of 2 to 40% by weight based on the amount of the slag, said phosphate or mixture of phosphates having surface tension reducing action or said method further comprising adding a detergent or mixture of detergents to said slag, sand, gravel, and activator, said basic component being magnesium oxide, or magnesium oxide in combination with aluminum oxide, titanium oxide, zirconium oxide, or zinc oxide, said basic component being present in an amount of 2 to 20% by weight based on the amount of the slag, said improvement causing the formation of a concrete of great mechanical strength and high chemical resistance with the magnesium oxide and phosphate or mixture of phosphates incorporated into the concrete without the need for heating at a high temperature.

5,082,502

CLEANING APPARATUS AND PROCESS

Kam B. Lee, Chelmsford; Allan C. Morgan, Manchester, both of Mass.; L. Willard Richards, Santa Rosa, Calif., and Dan K. Puckett, Pampa, Tex., assignors to Cabot Corporation, Waltham, Mass.

Filed Sep. 8, 1988, Ser. No. 241,454

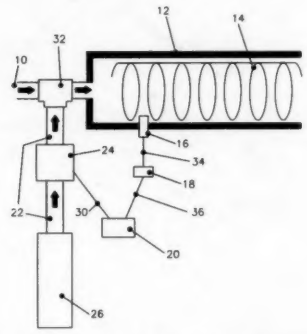
Int. Cl.[5] B08B *9/02*

U.S. Cl. 134—1 **7 Claims**

1. A process for cleaning an interior surface of an apparatus comprising:

generating a shock wave in the apparatus in a chamber that is separate from the surface to be cleaned;

directing the shock wave past the surface to be cleaned, wherein said shock wave is supersonic at the point of



initial contact with the surface, to dislodge particles from the surface;

removing the particles with a gaseous stream.

5,082,503

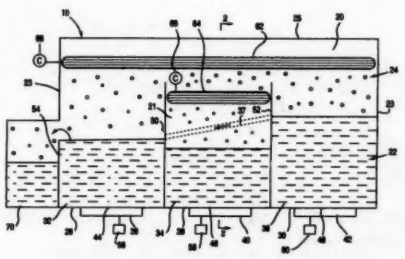
METHOD FOR REMOVING CONTAMINANTS FROM THE SURFACES OF ARTICLES

Robert M. Sluga, Gurnee; Randolph H. Watkins, Wonder Lake; Jerry D. Fisher, McHenry; Dennis C. Berry, Woodstock, and Milo Eldridge, Ringwood, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Filed Oct. 22, 1990, Ser. No. 601,229

Int. Cl.[5] B08B *3/08*

U.S. Cl. 134—26 **20 Claims**



1. A method for removing contaminants from the surfaces of articles with two different solvents, which comprises treating the articles sequentially with a nonflammable heated solvent consisting essentially of a fluorocarbon and up to an azeotropic amount of an alcohol and a flammable solvent consisting essentially of an alcohol, respectively, in a chamber having compartments containing the solvents wherein the temperatures of the flammable and nonflammable solvents are maintained in the range of about ambient to boiling and the vapors of the flammable and nonflammable solvents form a nonflammable gaseous mixture within the chamber.

5,082,504

PROCESS FOR THE PREPARATION OF A MIXTURE OF SUCROSE OXIDATION PRODUCTS AND THE USE THEREOF

Ernst I. Leupold, Neu-Anspach; Karl-Heinz Schönwälder, Kelkheim; Wolfram Fritsche-Lang, Bensheim; Merten Schlingmann, Kunigstein; Adolf Linkies, Frankfurt am Main; Werner Gohla, Niederkassel, and Franz-Josef Dany, Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 10, 1990, Ser. No. 462,489

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1989, 3900677

Int. Cl.[5] B08B *3/00*

U.S. Cl. 134—42 21 Claims

1. A process for the preparation of a mixture of sucrose oxidation products which comprises a salt of sucrosetricarboxylic acid comprising

reacting sucrose with oxygen in an aqueous medium in the presence of a platinum metal/active carbon catalyst at elevated temperatures; and

neutralizing the reaction product to produce the salt of the reaction product, which comprises the starting materials being heated stepwise over the course of 5 to 15 hours from room temperature up to 60 to 95° C.

5,082,505

SELF-SUSTAINING POWER MODULE

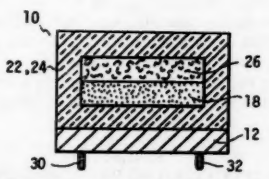
Albert O. Cota, 17475 Flanders St., Granada Hills, Calif. 91344, and John J. Reed, 5052 Meadow Wood Ave., Lakewood, Calif. 90712

PCT No. PCT/US88/04704, § 371 Date May 8, 1989, § 102(e) Date May 8, 1989, PCT Pub. No. WO90/07797, PCT Pub. Date Jul. 12, 1990

PCT Filed Dec. 29, 1988, Ser. No. 474,737

Int. Cl.[5] H01L *31/06, 31/04;* H02N *6/00*

U.S. Cl. 136—253 4 Claims



1. A self-sustaining power module comprising:

a) a photovoltaic cell,

b) a glass enclosure having a phosphor deposited to its inner surfaces and a tritium gas inserted into and hermetically sealed within said glass enclosure, wherein said glass enclosure functions as a shield against radioactivity and as a self-sustaining photon-generating means that is attached to the receptor surface of said photovoltaic cell where the photons bombard and cause said photovoltaic cell to generate an electrical current flow, and

c) means for applying the current from said photovoltaic cell to an external load.

5,082,506

PROCESS OF FORMING NIOBIUM AND BORON CONTAINING TITANIUM ALUMINIDE

Shyh-Chin Huang, Latham, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 26, 1990, Ser. No. 589,823

Int. Cl.[5] C22C *14/00*

U.S. Cl. 148—2 6 Claims

1. A method of forming a composition of titanium, aluminum, nobium, and boron of higher ductility comprising casting the following approximate composition:

$$Ti_{34-50.5}Al_{43-48}Nb_{6-16}B_{0.5-2.0}$$

and thermomechanically working the cast composition.

5,082,507

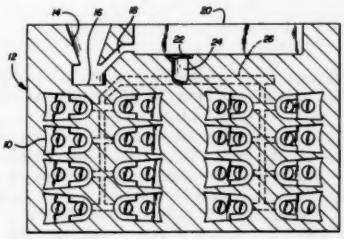
AUSTEMPERED DUCTILE IRON GEAR AND METHOD OF MAKING IT

Gregory T. Curry, 1283 Oakwood Ct., Rochester Hills, Mich. 48307

Filed Oct. 26, 1990, Ser. No. 603,558

Int. Cl.[5] C21D *5/00*

U.S. Cl. 148—2 16 Claims



13. An austempered, ductile iron article formed from an iron alloy melt having a substantially homogeneous composition consisting essentially of, by weight, 3–4% carbon, 2–2.5% silicon, 0.25–0.3% manganese, 0.05–0.6% copper, 0.2–0.3% phosphorus, 0.005–0.01% sulfur, and the balance iron, and formed by a delayed inmould inoculation process to insure homogeneity of the melt, said article being cast in a flaskless moulding machine, cooled, heat treated at a first temperature of approximately 1628° F. for a period of approximately one ½ hour, and quenched at a second temperature of approximately 526° F. for a period of approximately 4 hours to produce an article having a matrix of acicular ferrite and high-carbon stable austenite, said article being characterized in that it exhibits a yield strength of at least 125,000 psi, a tensile strength of at least 175,000 psi, an impact strength of at least 20 ft-lbs at −110° F., an elongation of at least 2%, and a hardness of at least 340 BHN.

5,082,508

PROCESS FOR CREATING HIGH STRENGTH TUBING WITH ISOTROPIC MECHANICAL PROPERTIES

Stanley R. Nelson, Minneapolis, Minn., assignor to Alliant Techsystems Inc., Minnetonka, Minn.

Filed Nov. 13, 1990, Ser. No. 612,418

Int. Cl.[5] C21D *8/02*

U.S. Cl. 148—12.3 18 Claims

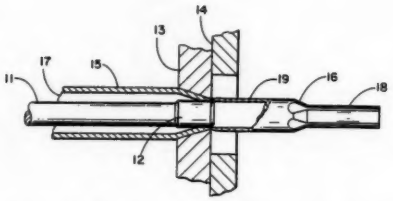
14. A method of processing alloy steel into high strength tubing of high dimensional precision for use in high performance cartridge cases, or the like, consisting essentially of the steps of:

austenitic conditioning the alloy steel at a temperature in the

range of about 1850° F. to about 2000° F. for a predetermined time;

subjecting the alloy steel to a single pass drawing operation accompanied by a reduction of approximately 35% to 40%;

subjecting the alloy steel to a cryogenic step in which it is frozen to approximately −100° F. for a predetermined time;



age hardening the alloy steel by heating it to a temperature in the range of 800° F. to 950° F. for a predetermined time; and

wherein the alloy steel is selected from a group consisting of high nickel stainless steels, semi-austenitic stainless steels and cold worked austenitic stainless steels.

5,082,509

METHOD OF PRODUCING ORIENTED ELECTRICAL STEEL SHEET HAVING SUPERIOR MAGNETIC PROPERTIES

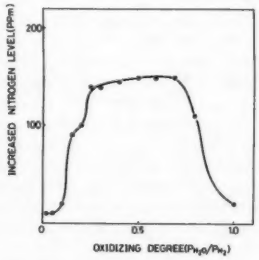
Yoshiyuki Ushigami; Toyohiko Konno; Yozo Suga; Kiyoshi Ueno, all of Kitakyushu; Mikio Itoh; Toshio Nishiyama, both of Himeji, and Kenichi Takimoto, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 12, 1990, Ser. No. 508,772

Claims priority, application Japan, Apr. 14, 1989, 1-94414; May 22, 1989, 1-128423

Int. Cl.[5] H01F *1/04*

U.S. Cl. 148—111 **16 Claims**



1. A method of producing an oriented electrical steel sheet having superior magnetic properties, comprising the steps of: hot rolling a slab containing 0.8 to 6.8% of Si, 0.008% to 0.048% of Al acid soluble, the balance being Fe and accompanying impurities, by weight to form a strip, cold rolling the strip, primary-recrystallization annealing, coating the strip with an annealing separator, and finishing annealing, a nitriding treatment being effected after said primary recrystallization annealing but before the start of the secondary recrystallization of said finishing annealing, wherein an atmosphere oxidizing degree (PH_2O/PH_2) in the primary recrystallization annealing process is defined as within a range of from 0.15 to 0.80.

5,082,510

METHOD FOR PRODUCING NON-ORIENTED STEEL SHEETS

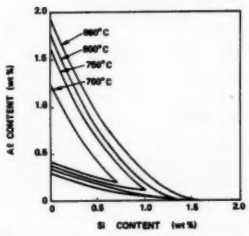
Akihiko Nishimoto; Yoshihiro Hosoya, and Toskhiaki Urabe, all of Tokyo, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 101,721, Sep. 28, 1987, abandoned. This application Mar. 27, 1989, Ser. No. 329,417

Claims priority, application Japan, Sep. 29, 1986, 61-228114

Int. Cl.[5] H01F *1/04*

U.S. Cl. 148—111 **9 Claims**



1. A method for producing a non-oriented electrical steel with precise thickness and homogeneous magnetic property comprising the steps of:

providing a steel slab, which comprises:

0.01 wt. % or less C,

0.003 wt. % or less N,

0.01 to 0.1 wt. % Mn,

1.9 wt. % or less Al,

1.7 wt. % or less Si, and

the balance being Fe and inevitable impurities;

hot-rolling the steel slab in the austenite phase at a finishing temperature between a first Ar_3 transformation point and a second Ar_3 transformation point into a hot-rolled steel strip to coil the hot-rolled steel strip, said first Ar_3 transformation point being determined when the steel slab is being worked, and said second Ar_3 transformation point being determined when the steel slab is not being worked, said second Ar_3 transformation point being higher than said first Ar_3 transformation point; and

cold-rolling the hot-rolled steel strip into a cold-rolled steel strip, followed by annealing the cold-rolled strip.

5,082,511

PROTECTIVE COATING PROCESSES FOR ZINC COATED STEEL

Samuel T. Farina, Mt. Clemens, and Karl A. Korinek, Troy, both of Mich., assignors to Henkel Corporation, Ambler, Pa.

Filed Sep. 7, 1989, Ser. No. 404,236

Int. Cl.[5] C23C *22/36*

U.S. Cl. 148—257 **20 Claims**

1. A process for protectively coating a surface of zinc coated or zinc alloy coated steel, said process comprising the steps of:

(A) contacting the predominantly zinc surface with a composition effective for activating said predominantly zinc surface for phosphating for a time effective for activating;

(B) forming over the surface activated in step (A), within a time not greater than 10 seconds, a phosphate conversion coating consisting predominantly of zinc phosphate and containing at least 3% by weight manganese, by contacting the surface activated in step (A) with a composition consisting essentially of water and:

Total Phosphate: 5–20 g/L

Zn^{+2}: 1.0–5.0 g/L

Mn^{+2}: 0.5–3.0 g/L

Ni^{+2}: 0.5–3.0 g/L

Iron cations: 0.0–0.5 g/L

Simple Fluoride: 0.0–1 g/L

Complex Fluoride: 0.1–7 g/L

"Accelerator": 2–10 g/L

(C) posttreating the conversion coating formed in step (B) by contact for a sufficient time with a posttreating composition; and

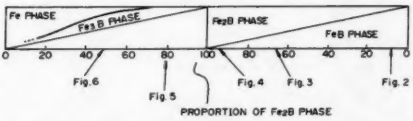
(D) surface coating the posttreated conversion coated surface formed in step (C) with a coating at least 10 μm thick of material selected from the group consisting of polyester polymers, fluoropolymers that are predominantly poly(vinylidene fluoride), siliconized polyester polymers, copolymers of epoxy resins and hardeners for such resins, and materials that are predominantly poly(vinyl chloride) ("PVC").

5,082,512

BORONIZED SLIDING MATERIAL

Kenichiro Futamura; Sumyong Hong, and Sinichi Mizuguchi, all of Toyota, Japan, assignors to Taiho Kogyo Co., Ltd., Toyota, Japan

Filed Jun. 22, 1989, Ser. No. 369,974
Claims priority, application Japan, Jul. 22, 1988, 63-181671
Int. Cl.[5] C23C *8/70*
U.S. Cl. 148—330 **5 Claims**



1. A boronized sliding material having improved seizure-resistance and consisting of a boronized ferrous material, wherein the sliding surface of said material consists of from 96 to 65 area % of an Fe_2B phase and from 35 to 4 area % of an Fe_3B phase.

5,082,513

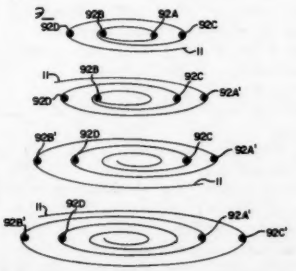
Patent Not Issued For This Number

5,082,514

METHOD FOR PRODUCING FIBER REINFORCED POLYMER BEAMS, INCLUDING LEAF SPRINGS

William B. Howell, 14652W River Oaks Dr., Lincolnshire, Ill. 60069

Filed Apr. 26, 1990, Ser. No. 514,872
Int. Cl.[5] B65H *81/00*; F16F *1/18, 1/36*
U.S. Cl. 156—175 **3 Claims**



1. A method of forming a fiber reinforced structure using a winding fixture including a frame at least one set of pins for supporting a first end of the fiber reinforced structure, said set of pins including at least a first pin and a second pin, each said pin being retractable, extendable and translatable relative to said frame, and means for supporting a second end of the fiber reinforced structure comprising the steps of:

a) winding said fiber continuously and selectively around said pins and said support means;

b) retracting the first pin of said set of pins, translating the first pin to the opposite side of said second pin and extending said first pin;

c) retracting said second pin of said set of pins, translating said second pin to the opposite side of said first pin and extending said second pin; and

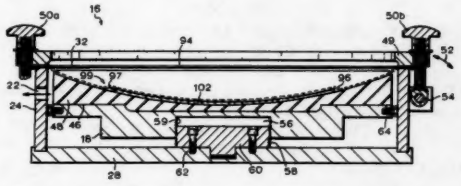
d) continuing to alternate the retraction, translation and extension of said first and second pins while winding said fiber around said first and second pins when extended to provide a fiber reinforced structure having one of various predetermined sizes and shapes.

5,082,515

METHOD OF FORMING A BILAYER GLAZING PANEL

George E. Cartier, Springfield, Mass.; Carl P. Piretti, Collinsville, Conn., and Robert H. M. Simon, Longmeadow, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 26, 1990, Ser. No. 617,734
Int. Cl.[5] B32B *31/24*
U.S. Cl. 156—212 **13 Claims**



1. A method of forming a bilayer glazing panel which comprises:

a) providing an optically clear prelaminate of stretched polyester film coated with a cross-linked, self-healing polyurethane layer;

b) assembling the prelaminate with a layer of plasticized partial polyvinyl butyral with the side of the polyester film without the polyurethane layer in facing contact with a subjacent textured surface of the partial polyvinyl butyral layer and the partial polyvinyl butyral layer facing a sheet of glass;

c) clamping the assembly of plastic layers of step b) in a perimeter anchoring system;

d) sequentially carrying out the following steps i), ii) and iii) within an air autoclave;

i) deairing the interface between the polyester film and plasticized partial polyvinyl butyral;

ii) forcing localized regions of the layers of step c) within the perimeter anchoring system against the sheet of glass; and then

iii) subjecting the assembly of step ii) to elevated temperature and pressure while the plastic layers remain clamped within the perimeter anchoring system to firmly bond the plastic layers and glass sheet together.

5,082,516

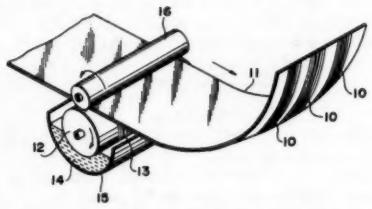
PROCESS FOR PRODUCING CHEMICAL ANALYTICAL SLIDE

Mutsuo Akao, and Takuichi Komatsu, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Continuation of Ser. No. 143,393, Jan. 13, 1988, abandoned. This application May 20, 1991, Ser. No. 703,594
Claims priority, application Japan, Jan. 13, 1987, 62-4048
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—277 **3 Claims**

1. A process for producing a chemical analytical slide including an upper slide frame, a lower slide frame with at least one of said upper slide frame and lower slide frame having an opening therein and a chemical analytical film therebetween which is exposed through said opening, said process comprising passing a strip sheet in a longitudinal direction, printing a plurality of bar codes on the strip sheet spaced transversely to the longitudinal direction by intaglio printing so that lines of the bar codes extend in the longitudinal direction, forming a

plurality of slide frames from the strip sheet so that a bar code is present on the slide frames, and forming the chemical analyt-



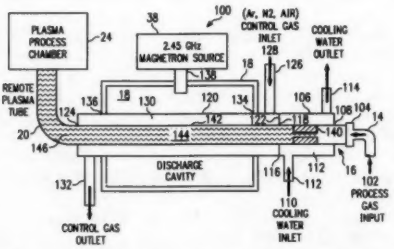
ical slide wherein at least one of the upper slide frame and lower slide frame is a slide frame formed from the strip sheet.

5,082,517

PLASMA DENSITY CONTROLLER FOR SEMICONDUCTOR DEVICE PROCESSING EQUIPMENT

Mehrdad M. Moslehi, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 23, 1990, Ser. No. 571,799
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—345 **50 Claims**



1. A plasma density controller for semiconductor device processing equipment for controlling the amount of plasma activation for a process gas as a result of absorbing gas discharge energy from a gas discharge energy source, comprising:

a jacket interposed between the gas discharge energy source and the process gas, said jacket adapted for the presence of a control fluid having the ability to variably control the amount of plasma-generating energy that the process gas receives; and

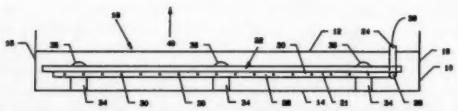
controls for variably adjusting said control fluid physical parameters to influence the amount of energy the process gas absorbs.

5,082,518

SPARGER PLATE FOR OZONE GAS DIFFUSION

James S. Molinaro, Coplay, Pa., assignor to SubMicron Systems, Inc., Allentown, Pa.

Filed Oct. 29, 1990, Ser. No. 604,510
Int. Cl.[5] B44C *1/22;* **H01L** *21/306;* **B08B** *5/00*
U.S. Cl. 156—345 **7 Claims**



1. A gas distribution system for a bath tank comprising:

a. a liquid-containing tank having a bottom and multiple sides;

b. a gas-conducting pipe mounted generally adjacent to the bottom of the tank having holes for releasing gas; and,

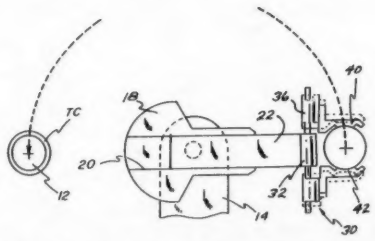
c. a sparger plate mounted in the tank over the pipe having diffusion holes for distributing gas from the pipe generally evenly throughout the bath in the tank.

5,082,519

TIRE CARCASS TRANSFER ROBOT

Karl W. Klose, Findlay, and Gary H. Benjamin, Kenton, both of Ohio, assignors to Cooper Tire & Rubber Company, Findlay, Ohio

Filed May 25, 1990, Ser. No. 529,065
Int. Cl.[5] B29D *30/08;* **B65H** *9/12*
U.S. Cl. 156—396 **3 Claims**



1. A transfer robot used in combination with a first stage carcass supply station and a second stage tire building drum for carrying a cylindrical tire carcass from a first position located on the carcass supply station to a second position located on the tire building drum, the combination comprising:

a tire building drum mounted such that its axis of rotation is horizontal, said drum having an end over which a carcass can be loaded onto said drum;

a carcass supply station supplying cylindrical tire carcasses having bead areas at their ends, wherein each said carcass is supplied with its longitudinal axis horizontal and in predetermined alignment with the axis of rotation of the tire building drum;

a robot located between the carcass supply station and the tire building drum; said robot comprising,

a track means extending parallel with the axis of rotation of said tire building drum,

a carriage movable along said track means,

a headstock mounted on said carriage,

a rotatable spindle supported in said headstock on an axis of rotation parallel with the axis of rotation of said tire building drum,

a main support member attached to and rotatable with said spindle,

a guide extending outwardly on said main support member to one side of said spindle,

slide means movable along said guide toward and away from the axis of rotation of said spindle,

a carcass carrying fixture connected to said slide means,

gripping means on said fixture for gripping a carcass at its bead areas, said gripping means comprising two sets of opposing gripping arms and means supporting said gripping arms for movement toward and away from each other to grip or release a carcass,

means for rotating said spindle to swing said gripping means with a carcass therein from the first position to a position axially displaced from and coaxial with said tire building drum,

means for moving said carriage to carry a carcass so aligned with said tire building drum along the axis of rotation of said drum over said end of said drum and into the second position around said drum, and

means for releasing said gripping means from the carcass

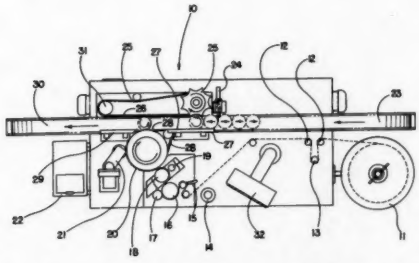
at the second position and retracting said gripping means toward said spindle leaving the carcass deposited on said tire building drum.

5,082,520

AUTOMATIC HIGH-SPEED LABELING MACHINE EMPLOYING VARIOUS LINEAR AND ROTATIONAL SPEEDS OF THE CONTAINER

Michael J. West, and Jimmy D. Williamson, both of 1465 Ellerd Dr., Turlock, Calif. 95380

Filed Dec. 3, 1990, Ser. No. 620,896
Int. Cl.[5] B65C *9/04*
U.S. Cl. 156—450 **4 Claims**



2. An improved automatic high-speed labeling machine of the type in which opposite sides of upright cylindrical containers are engaged by parallel belts, one of which moves in a slower linear direction than the other for rotating and linearly propelling containers tangentially past a rotating label transport means for transferring a label to a container, the improvement comprising:

A. a pair of stationary pads, one positioned linearly ahead of and the other positioned linearly behind the slower moving parallel belt, for laterally engaging one side of a container thereby causing its linear speed to increase but its rotational speed to decrease as the container is rolled along said pads for rapid entrance and exit from a label transport means; and wherein

B. said rotating label transport means rotates at the same peripheral speed and in cooperation with the linear speed of the slower moving parallel belt for receiving a container and said container trapped between said parallel belts is forced to decrease its linear speed while increasing the container's rotational speed to equal that of the said rotating label transport means so that a container may lift and wrap a label around itself while essentially in tangential contact with said rotating label transport means.

5,082,521

SEQUENCING MACHINE AND METHOD

Babak Sayyadi, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

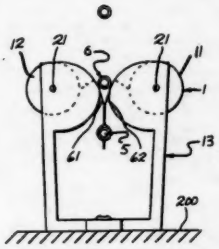
Filed Dec. 17, 1990, Ser. No. 628,246
Int. Cl.[5] B32B *31/10*
U.S. Cl. 156—552 **2 Claims**

1. A sequencing machine for retaining the order in which wires are placed comprising in combination:

a clamping means having a U-shaped member having a pair of upper arm portions;

each of said upper arm portions having mounting means including center protrusions for supporting a roll of tape, each of sadi rolls of tape having facing adhesive backed surfaces for securing a sequence of wires passing therebetween;

each upper arm portion also including an arcuate pressing surface over which said tape passes, each arcuate pressing surfaces being biased toward one another by said arms and



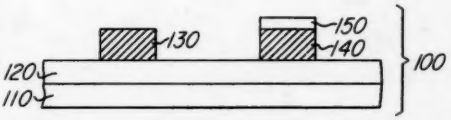
said arms allowing said arcuate pressing surfaces to move apart to allow insertion of wires therebetween.

5,082,522

METHOD FOR FORMING PATTERNED DIAMOND THIN FILMS

Andrew J. Purdes, Garland, and Francis G. Celii, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 14, 1990, Ser. No. 567,423
Int. Cl.[5] C30B *25/06*
U.S. Cl. 156—612 **20 Claims**



1. A method of forming a patterned diamond film on a body, comprising the steps of:

(a) forming a masking layer on a portion of said body;

(b) forming nucleation sites only on select regions of said body;

(c) then removing said masking layer; and

(d) then forming a diamond film on said select regions of said body.

5,082,523

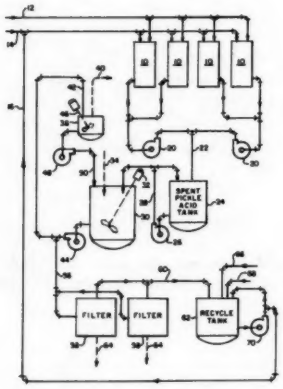
PROCESS OF REGENERATING SPENT HF-HNO_3 PICKLE ACID CONTAINING $(ZrF_6)^{-2}$

Roy G. Walker, Ogden, Utah, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 19, 1990, Ser. No. 615,675
Int. Cl.[5] B44C *1/22*; C23F *1/00*
U.S. Cl. 156—642 **6 Claims**

1. A process for regenerating spent HF-HNO_3 pickle acid containing $(ZrF_6)^{-2}$, comprising the steps of:

adding $NaNO_3$ to a spent HF-HNO_3 pickle acid containing $(ZrF_6)^{-2}$ to precipitate Na_2ZrF_6; and



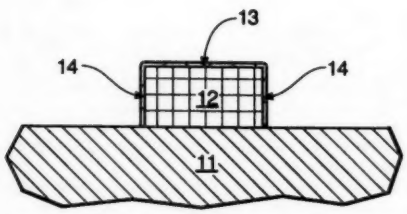
separating the HF-HNO_3 pickle acid from the Na_2ZrF_6 precipitate.

5,082,524

ADDITION OF SILICON TETRABROMIDE TO HALOGENATED PLASMAS AS A TECHNIQUE FOR MINIMIZING PHOTORESIST DETERIORATION DURING THE ETCHING OF METAL LAYERS

David A. Cathey, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jul. 30, 1990, Ser. No. 559,959
Int. Cl.[5] B44C *1/22*; C23F *1/02*
U.S. Cl. 156—643 **4 Claims**



1. A method for performing reactive-ion etches of metal layers in a plasma reactor comprising the following steps:

a) providing a partially fabricated integrated circuit structure having a metal layer on the upper surface thereof;

b) partially covering the metal layer with a photoresist mask; and

c) establishing a flow of gases through the reactor, said gases comprising silicon tetrabromide and compounds which ionize in an RF electric field to form halogenated species;

d) subjecting the integrated circuit structure to a plasma created by establishing an RF electric field within the reactor.

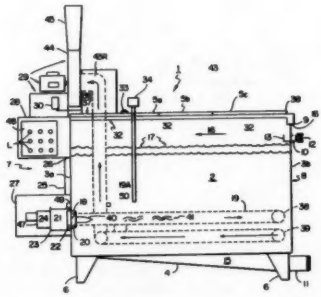
5,082,525

METHOD AND APPARATUS FOR IMPROVING THE PERFORMANCE OF LIQUID WASTE EVAPORATORS

Samuel G. Travis, Bedford, N.H., assignor to Hea Associates, Inc., Goffstown, N.H.

Filed Jan. 30, 1990, Ser. No. 472,584
Int. Cl.[5] B01D *1/14, 3/42*; C02F *1/14*
U.S. Cl. 159—16.1 **13 Claims**

1. In apparatus for converting a water-based fluid containing water-soluble and insoluble waste contaminants into environmentally safe vaporous exhaust, in which contaminated fluid in a tank is heated by combusting fuel and flowing the resulting hot gases through flue tubing with the fluid so as to heat and vaporize said fluid, means for flowing air above the fluid to cause the vaporized fluid and air stream to flow through an exit external to the tank, and at least one suction fan communicating with said means for flowing air external to the tank; the improvement which comprises means for funneling the hot gas stream along the said fluid tubing externally of the tank, and for separately and independently funneling the fluid vapor-air stream externally of the tank; means for exhausting said streams, wherein said exhaust means comprises means for directing said separate streams to a common region upstream of said at least one suction fan; and means for balancing the pressures of said separate streams within said means for directing.



13. In a method for converting a water-based fluid containing water-soluble and insoluble waste contaminants into environmentally safe vaporous exhaust wherein the contaminated fluid is heated in a tank by combusting fuel, and the resultant hot combustion gases are flowed through flue tubing in heat exchange contact with the fluid so as to heat and vaporize said fluid, and flowing air above the fluid to pick-up fluid vapor, the improvement which comprises separately and independently funneling the hot combustion gases and fluid vapor-air stream externally of the tank by directing separate stream of hot gases stream and fluid vapor-air stream of equal pressures from opposite directions to a common region and withdrawing both the hot gases stream and fluid vapor-air stream simultaneously from the common region by fan suction whereby said fan suction essentially controls the removal of the hot gas stream and fluid vapor-air stream, so as to prevent air flow variation that can cause flashback in the fluid tubing.

5,082,526

PROCESS OF PRODUCING KRAFT PULPING LIQUOR BY THE OXIDATION OF WHITE LIQUOR IN THE PRESENCE OF LIME MUD

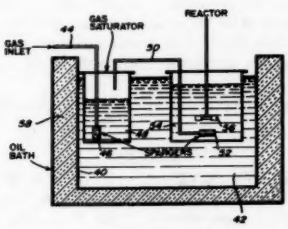
Gilles Dorris, Laval, Canada, assignor to Pulp and Paper Research Institute of Canada, Pointe Claire, Canada

Continuation of Ser. No. 299,585, Jan. 23, 1989, abandoned. This application Apr. 5, 1990, Ser. No. 505,220
Int. Cl.[5] D21C *11/04, 11/12*
U.S. Cl. 162—30.11 **13 Claims**

1. In a process of producing kraft cooking liquor for addition to a digester for enhancement of the yield derived from pulping of wood chips in which all the black liquor obtained from kraft digested pulp is concentrated and burned, the resulting smelt is dissolved in water to produce a kraft green liquor, causticizing the resulting kraft green liquor with lime in a causticizer to produce a kraft white liquor for use in digestion, mixed with lime mud particles whose major component is calcium carbonate, the improvement comprising the steps of:

oxidizing the produced liquor mixed with lime mud particles in the causticizer or in a pipe line reactor directly con-

nected to the causticizer, the liquor being oxidized consisting essentially of kraft white liquor to convert sodium sulfide in said white liquor to sodium polysulfide and sodium hydroxide,



wherein the oxidation of said white liquor is effected by injecting small bubbles of an oxygen containing gas through a sparger into a suspension of said lime mud particles in said white liquor while agitating said suspension.

5,082,527

NITROGEN-CONTAINING POLYMERIC COMPOUNDS

Henning Bachem, Cologne; Georg Schröder, Burscheid; Carlhans Süling, Odenthal; Jürgen Reiners, Leverkusen; Janos Muszik, Leverkusen; Dieter Arlt, Cologne; Manfred Jautelat, Burscheid, and Wolf-Dieter Schröer, Munich, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 14, 1989, Ser. No. 323,457

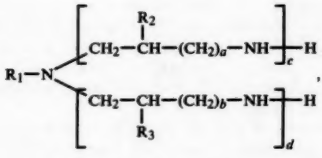
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1988, 3810424

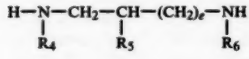
Int. Cl.[5] D21H *13/20*

U.S. Cl. 162—164.3 **8 Claims**

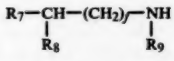
1. A method of imparting wet strength to paper formed from paper pulp comprising adding to the paper pulp a cross-linkable polymer containing a sulphonate group, which is obtained by reacting

(A) (1) a water-soluble mono- or polyamine selected from the group consisting of mono- or polyamines having the formulae





or



wherein

R_1, R_4 and R_6 independently represent a member selected from the group consisting of hydrogen, an unsubstituted C_1–C_5-alkyl radical, or a C_1–C_5-alkyl radical which is substituted by hydroxyl or amino,

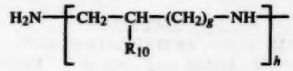
R_2, R_3, R_5 and R_9 independently represent a member selected from the group consisting of hydrogen, methyl or ethyl,

R_7 and R_8 independently represent a member selected from the group consisting of hydrogen, hydroxyl, an unsubstituted C_1–C_4-alkyl radical, or a C_1–C_4-alkyl radical which is substituted by hydroxyl,

a, b, e and f independently represent an integer selected from the group consisting of 0, 1, 2, 3 or 4, and

c and d independently represent an integer selected from the group consisting of 1, 2, 3, 4, 5 or 6; and/or

(A) (2) a polyalkylenepolyamine of the formula



wherein

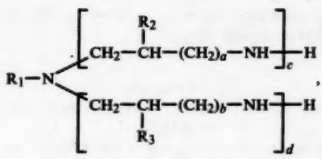
R_{10} represents a member selected from the group consisting of hydrogen or methyl,

g represents an integer selected from the group consisting of 0 or 1, and

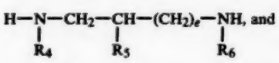
h represents an integer selected from the group consisting of integers from 14 to 2,500; and/or

(A) (3) a water-soluble polyamidoamine having a molecular weight of at least 800 and being prepared from

(i) polyamines of the formula



or from mixtures of these polyamines with up to 50 mole % of diamines of the formula



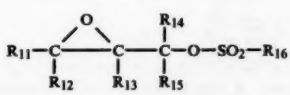
(ii) aliphatic or aromatic dicarboxylic acids having 2 to 12 atoms or functional derivatives thereof, and/or

(iii) amino-carboxylic acids containing 3 to 6 atoms or lactams thereof; and/or

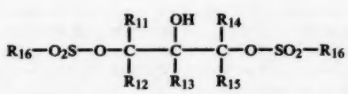
(A) (4) a water-soluble polyurea containing secondary amino groups; and/or

(A) (5) a polyalkyleneimine prepared by polymerization of 1,2-alkyleneimines; with

(B) a 2,3-epoxypropyl sulphonate having the formula



or a 2-hydroxypropyl 1,3-bis-sulphonate having the formula



wherein

R_{11}, R_{12}, R_{13}, R_{14} and R_{15} independently represent a member selected from the group consisting of hydrogen, or alkyl, cycloalkyl, aryl or aralkyl each of which is unsubstituted or substituted by alkoxy, cyano or a carboxylic acid alkyl ester, and

R_{16} represents a member selected from the group consisting

of an alkyl, cycloalkyl, aryl or aralkyl radical which is unsubstituted or substituted by hydroxyl, alkoxy, cyano, carboxamido, a carboxylic acid ester, amino, a mono-alkyl amino group or a dialkyl amino group;

or mixtures of these sulphonates with up to 15 mol % of an epihalogenohydrin or dihalogenohydrin, in a molar ratio of 0.75 to 3.5 mol of component (B) per mol of basic nitrogen in component (A).

5,082,528

IRON SALTS AS RETENTION AGENTS

Neil A. Hartman, Slidell, La., assignor to Eaglebrook, Inc., Slidell, La.

Filed Dec. 7, 1990, Ser. No. 624,327
Int. Cl.[5] D21H *17/64*
U.S. Cl. 162—175 **15 Claims**

1. A process for producing internally sized paper comprising the steps of:

providing a stock suitable for the production of paper;

adding a sizing material to the stock to impart water repellence to paper produced from the stock;

adding to the stock a solution of a partially hydroxylated iron salt hydrolyzable to ferric hydroxide;

mixing the stock, size and iron salt solution together and hydrolyzing said iron salt to ferric hydroxide; and

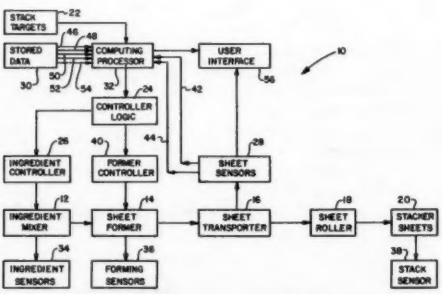
forming paper from the mixture, whereby the paper so produced is internally sized.

5,082,529

COLOR MEASUREMENT AND CONTROL OF A SHEET MATERIAL

Gary N. Burk, Powell, Ohio, assignor to ABB Process Automation Inc., Columbus, Ohio

Filed Mar. 27, 1990, Ser. No. 499,012
Int. Cl.[5] D21F *11/00*
U.S. Cl. 162—198 **15 Claims**



1. A method for generating a signal commensurate with the color of a stack of near white sheet of low opacity material from measurement of the properties of a relatively thin sheet of the material, comprising the steps of:

positioning a reflector having a known wavelength-dependent reflectance Rref(w) at a first measurement location;

positioning a single sheet of the material over the reflector;

illuminating the sheet at the first measurement location with a light source having a spectrum of wavelengths;

determining the wavelength-dependent intensity distribution I(w) of the light source;

measuring the reflectance of the sheet Rwht(w) over the reflector at the first measurement location as a function of reflected wavelength;

measuring the opacity of the single sheet at a selected wavelength interval and generating a wavelength-independent opacity value OP;

computing a color function of the stack,

$$Cst(w) = \int Rst(w)\ I(w)S)(w)dw$$

by determining the effective stack reflectance Rst(w) from parameters including the wavelength dependent measurements of the reflectance of the single sheet, Rwht(w), the reflectance of the reflector, Rref(w), and the opacity value OP at said selected wavelength interval, and wherein I(w) is said determined intensity distribution and S(w) is a wavelength-dependent observer sensitivity; and

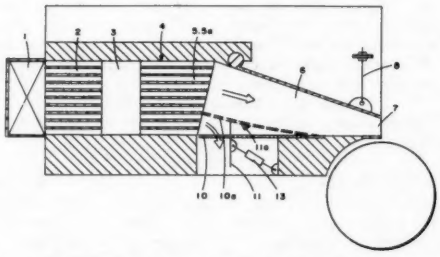
generating a signal commensurate with said color function.

5,082,530

METHOD AND DEVICE IN HEADBOX OF PAPER, BOARD OR PULP DRYING MACHINE

Juha Keskiivari; Vesa Rommi; Timo Rosendal; Teuvo Virkkunen, all of Karhula, and Veijo Virtamo, Kotka, all of Finland, assignors to Valmet-Karhula Inc., Finland

Filed Dec. 26, 1990, Ser. No. 633,681
Claims priority, application Finland, Dec. 22, 1989, 896202
The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.
Int. Cl.[5] D21F *1/06*
U.S. Cl. 162—216 **17 Claims**



1. In a headbox of a paper, board or pulp drying machine including, in sequence in a direction of stock flow, a header, a manifold, a turbulence generator and a slice chamber terminating at a slice opening, the improvement comprising flow dividing means downstream of said turbulence generator for altering a dimension of the slice chamber and structured and arranged to divert a portion of stock flow out of said slice chamber upstream of said slice opening without altering speed or direction of flow of non-diverted stock in said turbulence generator and said slice chamber, and means for adjusting said flow dividing means.

11. A method of adjusting the relation between highest and lowest flow-through volume of stock in a headbox in a paper, board or pulp drying machine, the headbox including, in sequence in the direction of stock flow, a header, a manifold, a turbulence generator and a slice chamber terminating at a slice opening, the method comprising the steps of:

altering a dimension of the slice chamber and thereby diverting a portion of stock flow from the slice chamber downstream of said turbulence generator and upstream of said slice opening without altering speed or direction of non-diverted stock in the turbulence generator and in the slice chamber.

5,082,531

HEAD BOX IN A PAPER MACHINE

Hiroshi Takeuchi, Fuji, Japan, assignor to Hasegawa Machinery Limited and Hiroshi Takeuchi, both of Shizuoka, Japan

Filed Oct. 26, 1990, Ser. No. 603,024
Int. Cl.[5] D21F *1/02*
U.S. Cl. 162—343 **4 Claims**

1. A head box in a paper making machine, comprising:

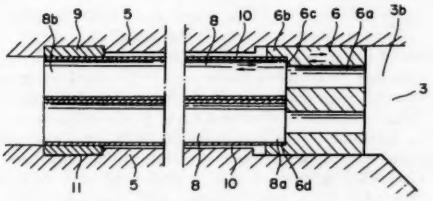
a frame having a front end, a rear end, and an inner peripheral surface;

a mixing chamber at said rear end of said frame, said mixing chamber having an outlet port;

a perforated plate having a plurality of conduction pores therethrough disposed in said outlet port of said mixing chamber;

a slice lip at said front end of said frame; and

a plurality of elongated pipes extending between said perforated plate and said slice lip, said elongated pipes at one end thereof being integrally connected to said perforated



plate, communicating with respective said conduction pores, and said elongated pipes being fixed relative to said frame at the other end thereof;

wherein said perforated plate is movably freely disposed in said outlet and not fixed relative to said frame, whereby said elongated pipes can thermally expand and contract due to temperature changes; and

wherein the portions of said plurality of elongated pipes extending between said ends thereof are spaced from said inner peripheral surface of said frame to form a gap such that said plurality of elongated pipes are free to thermally expand and contract.

5,082,532

PAPERMAKING MACHINE AND A SEAMED PAPERMAKER'S FABRIC

Marcel Dufour, Saint Yrieix, France, assignor to Asten Group, Inc., Charleston, S.C.

Continuation of Ser. No. 14,026, Feb. 12, 1987, Pat. No. 4,958,673, which is a continuation of Ser. No. 822,292, Jan. 24, 1986, Pat. No. 4,683,624. This application May 21, 1990, Ser. No. 526,511

Claims priority, application France, Feb. 19, 1985, 85 02349

The portion of the term of this patent subsequent to Sep. 25, 2007, has been disclaimed.

Int. Cl.[5] D21F *7/10*

U.S. Cl. 162—358 **3 Claims**

1. In a papermaking machine having a press position which requires the installation of an open fabric which is rendered endless in situ, a batt-on-base papermaker's wet press felt installed in said position comprising a pintle seamed base fabric and a cut and reneedled batt, said cut and reneedled batt being further comprised of a first portion which was needled prior to the cut and a second portion in the pintle seam area which is reneedled to substantially eradicate the cut and provide first and second portions which have substantially the same uniform internal construction, density, thickness and surface texture and form a continuous, homogeneous paper supporting surface.

5,082,533

HEATED EXTENDED NIP PRESS WITH POROUS ROLL LAYERS

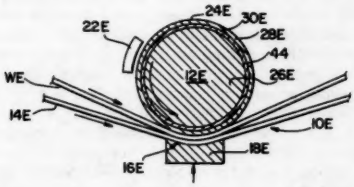
Jeffrey H. Pulkowski, Beloit, Wis.; Elizabeth A. Macklem, Monroe, N.Y., and L. H. Busker, Rockton, Ill., assignors to Beloit Corporation, Beloit, Wis.

Continuation-in-part of Ser. No. 507,321, Apr. 10, 1990, abandoned. This application Jan. 16, 1991, Ser. No. 641,989

The portion of the term of this patent subsequent to Nov. 17, 2006, has been disclaimed.

Int. Cl.[5] D21F *3/00, 5/00*

U.S. Cl. 162—359 **7 Claims**



1. An apparatus for removing fluid from a fibrous web, said apparatus comprising:

a press member;

blanket means cooperating with said press member for defining therebetween an elongate pressing section such that the web is pressed between said press member and said blanket means during passage through said pressing section;

a pressing shoe for urging said blanket means toward said press member such that when the web passes through said pressing section, fluid is removed from the web;

heating means disposed adjacent to said press member for transferring heat to the web and structured such that when the web passes through said press section, the web is subjected for an extended period to increased pressure and temperature so that water vapor generated within said pressing section during passage through said pressing section forces the fluid in the liquid phase away from the web;

said press member defining a pressing surface which is porous for inhibiting delamination of the web;

said press member further including:

a first solid inner layer;

a second outer layer extending around said first layer, said second layer having a pore size of between 2–50 microns; and

a third intermediate layer disposed between said first and second layers, said third layer having a pore size within the range 50–100 microns such that said third layer assists in ventilating said second layer and the web.

5,082,534

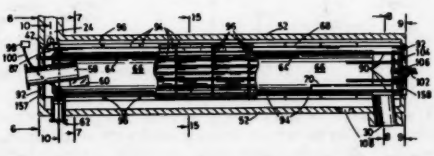
PYROLYTIC CONVERSION SYSTEM

Fred A. Breu, N. Canton, Ohio, assignor to Wayne Technology, Inc., Victor, N.Y.

Filed Mar. 14, 1990, Ser. No. 494,256

Int. Cl.[5] C10B *1/10*

U.S. Cl. 202—131 **41 Claims**



1. A pyrolytic conversion system for hydrocarbon contain-

ing materials which comprises a converter drum having opposite ends, a first of which is elevated above a second of which, said drum having an axis of rotation about which said converter drum is rotatable, an outer stationary drum disposed around said converter drum and defining a first chamber within which said converter drum is disposed, a casing disposed around said outer drum defining an oven chamber, means for heating said oven chamber to maintain the converter drum at a temperature sufficient to pyrolyze said materials, means in communication with said first chamber near the first end of said converter drum for extracting product gases of pyrolyzation, means disposed in essentially air tight relationship with said first chamber near the second end of said converter drum for the discharge of solid products of pyrolyzation, and means extending through said first chamber for injecting said materials into said first end of said converter drum while essentially excluding air from said first chamber.

40. In a pyrolytic converter having a rotatable converter drum having an axis of rotation and first and second ends where materials to be pyrolyzed are introduced and discharged, respectively, the improvement for pulverizing solid products of pyrolyzation which comprises a crusher bar loosely disposed in said drum along the axis thereof adjacent to said second end thereof, means inside of said converter drum for elevating and releasing said bar permitting said bar to fall and pulverize said solid particles into particles which are discharged from said converter drum, and wherein said elevating and releasing means comprises a bulkhead defining said second end of said converter drum, a plurality of rods mounted to said converter drum and extending from said bulkhead in the direction along the axis of said converter drum towards said first end of said converter drum, said rods being spaced circumferentially from each other, an opening defined in said converter drum between said rods for discharge of said solid product, said rods engaging, elevating and releasing said crusher bar as said converter drum rotates.

5,082,535

APPARATUS FOR THE EXTRACTION OF OIL OR POLYCHLORINATED BIPHENYL FROM ELECTRICAL PARTS THROUGH THE USE OF SOLVENTS AND FOR DISTILLATION OF THE SOLVENTS

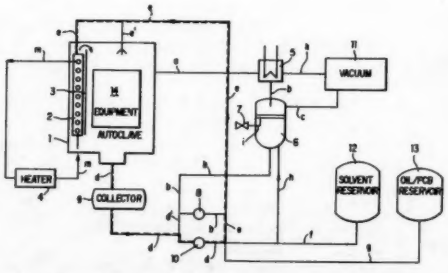
Gustav Oesch, Zurich; Paul Gmeiner, Lieli, and Urs Hofer, Zurich, all of Switzerland, assignors to Micafil, AG, Zurich, Switzerland

Continuation of Ser. No. 397,116, Aug. 22, 1989, abandoned, which is a division of Ser. No. 190,080, May 4, 1988, Pat. No. 4,879,004. This application Dec. 6, 1990, Ser. No. 622,282

Claims priority, application Switzerland, May 7, 1987, 01740/87

Int. Cl.[5] B01D *1/22, 3/10, 11/00*

U.S. Cl. 202—170 **2 Claims**



1. Apparatus for the extraction of oil or a polychlorinated biphenyl (PCB) from parts impregnated with an oil or PCB-containing dielectric liquid using a volatile solvent, and for distilling the volatile solvent from an oil or PCB-solvent mixture, said apparatus comprising:

an evacuable autoclave wherein parts to be purified are located;

a heated film evaporator being located in the autoclave and being fed with the solvent or the oil or PCB-solvent mixture;

an evacuable steam condenser for condensing solvent vapor received from the autoclave;

a vacuum device acting upon the steam condenser and the autoclave;

first pump means for recycling the condensed solvent back to the heated evaporator to intensify oil or PCB extraction from the parts to be purified and for discontinuing the solvent feed to the heated evaporator to effect together with the vacuum device intermediate pressure reduction phases at given times within the autoclave;

second pump means for circulating the oil or PCB-solvent mixture from the autoclave to the heated evaporator during each intermediate pressure reduction phase to effect distillation of solvent vapor produced in the heated evaporator off the circulating oil or PCB mixture; and

a condensate collector vessel connected to the autoclave and to the second pump means for collecting oil or PCB from the oil or PCB solvent mixture during each intermediate pressure reduction phase.

5,082,536

METHOD OF PRODUCING A HIGH CORROSION RESISTANT PLATED COMPOSITE STEEL STRIP

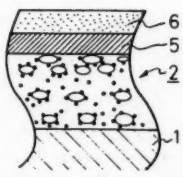
Teruaki Izaki; Makoto Yoshida; Masami Osawa; Seijun Higuchi, and Sato Hisaaki, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 284,120, Dec. 14, 1988, Pat. No. 4,910,095. This application Nov. 16, 1989, Ser. No. 437,439

Claims priority, application Japan, Dec. 29, 1987, 62-334055; Dec. 29, 1987, 62-334056; Dec. 29, 1987, 62-334057; Dec. 29, 1987, 62-334058

Int. Cl.[5] C25D *15/00*

U.S. Cl. 205—109 **10 Claims**



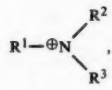
1. A method of producing a high corrosion resistant electroplated composite steel strip comprising coating at least one surface of a substrate consisting essentially of a descaled steel strip by at least first electroplating at least one surface of the substrate with a first electroplating liquid containing (a) matrix-forming metal ions selected from the group consisting (a) matrix-forming metal ions selected from the group consisting of zinc ions and mixtures of ions of zinc and at least one other metal than zinc to be alloyed with zinc, (b) a number of corrosion-preventing fine solid particles dispersed in the electroplating liquid and consisting essentially of fine core particles encapsulated by very thin organic or inorganic coating membranes, and (c) a co-deposition-promoting agent for promoting the co-deposition of the corrosion-preventing fine particles together with the matrix-forming metal, to form a base plating layer on the substrate surface,

said fine core particles comprising a member selected from the group consisting of CrO_3, Na_2CrO_4, K_2CrO_4, $K_2O.4AnO.4CrO_3$, $PbCrO_4$, $BaCrO_4$, $SrCrO_4$, $ZnCrO_4$, Zn-Al alloys, $Al_2O_3.2SiO_2.2H_2O$, $Zn_3(PO_4)_2.2H_2O$, $ZnO.ZnMoO_4$, $CaMoO_4$, $ZnOMoO_4$, $PbCrO_4.PbMoO_4.PbSO_4$,

and $TiO_2.NiO.Sb_2O_3$, which are all soluble in the first electroplating liquid;

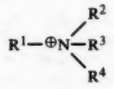
said coating membranes comprising at least one member selected from the group consisting of SiO_2, TiO_2, Al_2O_3, ZrO_2, ethyl cellulose resin, amino resins, polyvinylidene chloride resins, polyethylene resins and polystyrene resins which are all substantially insoluble in the first electroplating liquid; and

said co-deposition-promoting agent comprising at least one member selected from the group consisting of Ni^{2+} ions, Fe^{2+} ions, Co^{2+} ions, Cr^{3+} ions, TiO_2 colloid, Al_2O_3 colloid, amine compounds having a cationic polar structure of the formula (1):



(1)

ammonium compounds having a cationic polar radical of the formula (2):



(2)

in which formulae (1) and (2), R^1, R^2, F^3 and R^4 represent, respectively and independently from each other, a member selected from the group consisting of a hydrogen atom, an alkyl radical and an aryl radical, and polymers having at least one member selected from the group consisting of the cationic polar radicals of the formulae (1) and (2).

5,082,537

PROCESS AND APPARATUS FOR ROUGHENING A SUBSTRATE FOR PHOTOSENSITIVE LAYERS

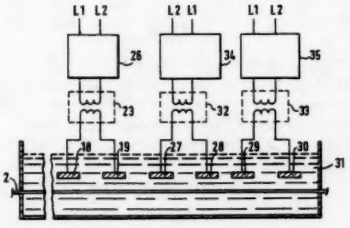
Joachim Stroszynski, Wiesbaden; Heinz Boergerding, Walluf, and Peter Lehmann, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 29, 1990, Ser. No. 500,955

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1989, 3910213

Int. Cl.[5] C25F *3/04*; B41N *3/04*; G03F *7/02*

U.S. Cl. 205—139 **11 Claims**



1. A process for continuous roughening of at least one surface of a metal substrate web for the subsequent application of photosensitive layers, comprising:

(a) mechanically roughening the surface, then;

(b) conveying said substrate web at a selected rate of between about 50 and 150 m/min through an aqueous electrolytic bath; and

(c) during said conveying step subjecting the surface of said web to an alternating current having a frequency higher than a standard frequency of 50 to 60 Hz such that the surface is electrochemically roughened, wherein said alternating current is applied at a frequency such that a spacing t of electrical cross-strokes on the substrate surface, said electrical cross-strokes being formed in step with changes in polarity of the alternating current, is less than or equal to 15 mm in accordance with the relationship $t=v/f$, the rate of conveyance of the substrate v being in mm/sec and the alternating current frequency F being H_z (1/sec).

5,082,538

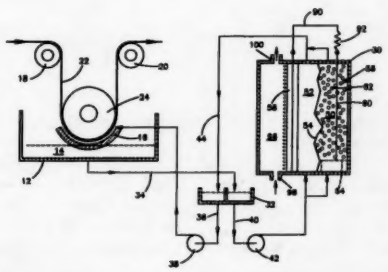
PROCESS FOR REPLENISHING METALS IN AQUEOUS ELECTROLYTE SOLUTIONS

Donald L. DeRespiris, Mentor; Eric J. Rudd, Painesville, and Carolyn Schue, Huntsburg, all of Ohio, assignors to ELTECH Systems Corporation, Boca Raton, Fla.

Filed Jan. 9, 1991, Ser. No. 638,938

Int. Cl.[5] C25D *7/06, 17/00*

U.S. Cl. 205—140 **41 Claims**



1. In a replenishment electrolytic cell for replenishing metal ions depleted from an electrolyte wherein said cell comprises an anode of the metal of said metal ions, a cathode, an electrical circuit connecting said anode and said cathode, and means for circulating said electrolyte to a source in which the metal ions are depleted from the electrolyte, the improvement wherein said cathode is a gas diffusion electrode.

5,082,539

FERROCENE COMPOUNDS AND USES THEREOF

Tetsuo Saji, and Katsuyoshi Hoshino, both of Tokyo, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 265,678, Oct. 27, 1988, abandoned, and a continuation-in-part of Ser. No. 340,006, Apr. 6, 1989, abandoned. This application Jan. 24, 1990, Ser. No. 469,299

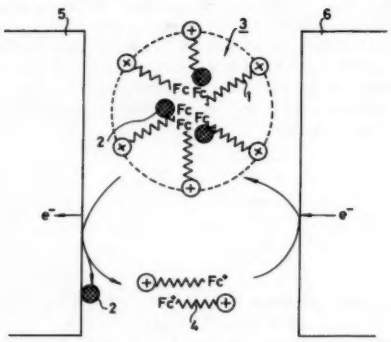
Claims priority, application Japan, Mar. 31, 1987, 62-075930; Aug. 28, 1987, 62-212718; Mar. 2, 1988, 63-047501; Mar. 8, 1988, 63-052696; PCT Int'l Appl., Mar. 30, 1988, PCT/JP/00323; Aug. 27, 1988, PCT/JP88/00855

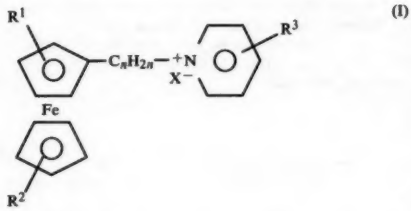
Int. Cl.[5] C25D *3/02*; C25B *3/12*

U.S. Cl. 205—162 **62 Claims**

24. A method of producing an organic thin film of a hydrophobic substance comprising:

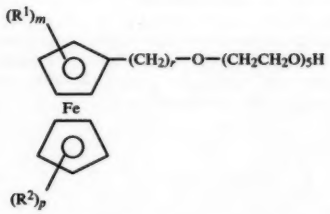
forming an aqueous phase of (a) the hydrophobic substance and (c) a ferrocene derivative represented by the general formula:





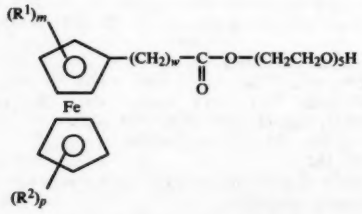
(I)

wherein R^1 and R^2 are each independently a hydrogen, a methyl group an ethyl group, a methoxy group or a carbomethoxy group, R^3 is a hydrogen, a methyl group, an ethyl group, a methoxy group, a carbomethoxy group, a hydroxyl group, carboxyl group or a sulfonic acid group, X is a halogen, and C_nH_{2n} is a straight or branched hydrocarbon group having 4 to 16 carbon atoms; or the general formula:



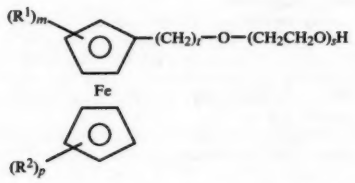
(IIA)

wherein m is an integer of 1 to 4, p is an integer of 1 to 5, r is an integer of 11 to 18, s is a real number of 2.0 to 70, and R^1 and R^2 are the same as described above; or the general formula:



(IIB)

wherein w is an integer of 2 to 18, and m, p, s, R^1 and R^2 are the same as described above or the general formula:



wherein t is an integer of 2 to 10, and R^1, R^2, m, p and s are the same as above;

providing an electrode in contact with the aqueous phase; and

electrolyzing the aqueous phase to form a thin film of the hydrophobic substance on a surface of the electrode.

5,082,540

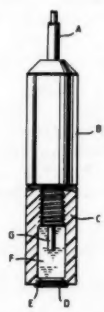
FLUORIDE ION SENSITIVE MATERIALS

Jeffrey D. Newman, Hail Weston, Great Britain; Ramin Pirzad, Bristol, United Kingdom; David C. Cowell, Wotton-Under-Edge, United Kingdom, and Antony A. Dowman, Nailsea, United Kingdom, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed May 7, 1990, Ser. No. 610,240

Int. Cl.[5] B22F *3/16*

U.S. Cl. 204—153.13 **16 Claims**



1. A process for preparation of a sintered material suitable for use as the fluoride ion sensitive component in a fluoride ion sensitive electrode exhibiting a Nernstian response to fluoride ion concentrations of 10^{-2} to 10^{-8} molar, said process comprising:

(1) mechanically forming a mixture consisting essentially of from 80 to 99.9 molar % crystalline lanthanum trifluoride and from 0.1 to 20 molar % crystalline calcium difluoride under a pressure of 10^7 Pa or more, and then

(2) sintering it at a temperature of 1,000° C. or above in an inert atmosphere.

5,082,541

METHOD AND APPARATUS FOR CONTINUOUS ELECTROPHORESIS

Jack S. Watson, Knoxville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 10, 1990, Ser. No. 551,387

Int. Cl.[5] B01D *57/02, 61/42*

U.S. Cl. 204—180.1 **11 Claims**

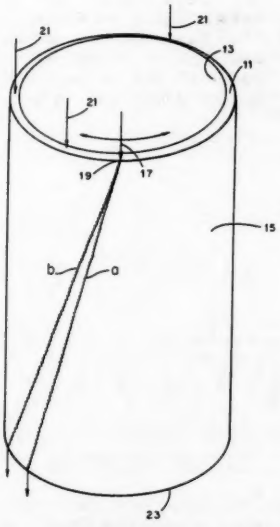
1. A method for continuous electrophoretic separation of components of a sample material having different electrophoretic mobilities, comprising the steps of:

a. introducing a carrier solution into a thin constant-width separation volume of a separator device wherein the volume is defined by a chamber having at least first and second wall portions uniformly spaced apart and disposed for controlled, reversible relative movement, means for applying a uniform, reversible electric field to the volume in first and second directions transverse to the direction of movement of said wall portions of the chamber and a plurality of spaced apart collection ports at positions along said chamber commensurate with the corresponding zones of separated components of said sample;

b. introducing said sample material having at least two electrophoretically separable components into said carrier at a point between the walls of the chamber at an inlet of said chamber;

applying said electric field in said first direction for a period sufficient to produce differential increments of migration of the sample components in a first direction parallel to the direction of the applied electric field;

d. moving one of said wall portions of said chamber relative to the other in a first direction to produce couette flow of



the carrier solution and sample material in the separation volume sufficient to provide differential increments of separation of the electrophoretically separated components along a path parallel to the direction of movement of the said one wall portion;

e. applying said electric field in said second direction for a period sufficient to produce differential increments of migration of said sample components in a second direction parallel to the direction of the presently applied electric field;

f. moving said one wall portion of said .chamber relative to the other in a second direction reverse to the first direction of wall movement to produce couette flow in the reverse direction sufficient to provide further differential increments of separation of the electrophoretically separated components along a path parallel to the direction of movement of the said one wall;

g. repeating steps c through f to produce a net separation of said components of said sample in directions parallel to said wall portions; and

h. collecting the separated components of the sample material.

5,082,542

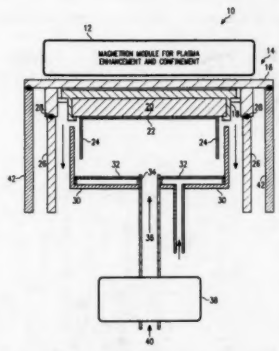
DISTRIBUTED-ARRAY MAGNETRON-PLASMA PROCESSING MODULE AND METHOD

Mehrdad M. Moslehi, Dallas, and Cecil J. Davis, Greenville, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 2, 1990, Ser. No. 561,851

Int. Cl.[5] H01H *1/46;* B01J *19/12*

U.S. Cl. 204—192.32 **60 Claims**



41. A method of magnetron-plasma enhanced processing of a semiconductor wafer, comprising the steps of:

associating a plurality of magnets to form a unit cell;

associating a plurality of said unit cells in a repetitive pattern to form a magnet array that produces a periodic magnetic field; and

directing said periodic magnetic field perpendicularly toward the surface of the wafer.

5,082,543

FILTER PRESS ELECTROLYSIS CELL

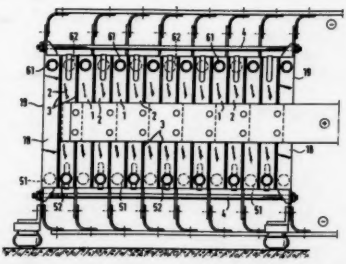
Michael Gnann, Pfaffenhofen, and Erwin Rossberger, Grossdingharting, both of Fed. Rep. of Germany, assignors to Peroxid-Chemie GmbH, Hollriegelskreuth, Fed. Rep. of Germany

Filed Oct. 30, 1990, Ser. No. 605,650

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1989, 3938160

Int. Cl.[5] C25B *9/00, 15/08*

U.S. Cl. 204—255 **14 Claims**



1. Electrolysis cell of the filter press type for the production of peroxy and perhalogenate compounds comprising alternatingly arranged cathodes and anodes provided with electrolyte feeds, wherein the cathodes (1) and anodes (2) consist of right parallelepiped-shaped hollow bodies between which are present frame-shaped seals (3) and which, via these seals (3), are connected together in a liquid-tight manner and insulated from one another to give a cell pile, the cathode hollow bodies (1) are liquid- and gas-permeable, the anode hollow bodies (2)

possess, above and below a platinum layer, openings for the introduction and removal of the anolyte and the effective anode surface is formed by the platinum metal layer of a composite anode comprising a valve metal substrate and a platinum layer present thereon which is obtainable by the hot isostatic pressing of a platinum foil on to a valve metal carrier.

5,082,544

APPARATUS FOR GAS GENERATION

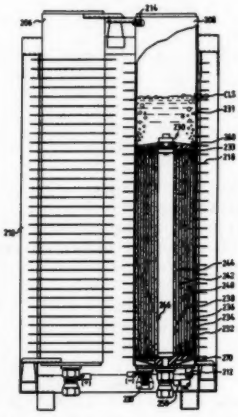
Alan P. Willey, and Neal T. Radford, both of Metro Manila, Philippines, assignors to Command International, Inc., Hong Kong

Filed Feb. 2, 1990, Ser. No. 473,668

Claims priority, application United Kingdom, Nov. 17, 1989, 8926096

Int. Cl.[5] C25B *9/00, 11/02, 15/08*

U.S. Cl. 204—270 **6 Claims**



4. An end cap for an electrolytic gas generation cell including a plurality of nested electrode tubes, the end cap having means for locating the tubes in spaced relation and a plurality of openings offset relative to one another interconnecting the regions between the locating means.

5,082,545

SPUTTERING APPARATUS

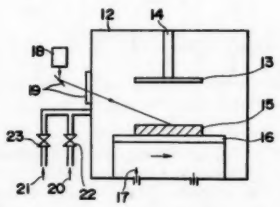
Kunio Tanaka; Youichi Ohnishi, and Masahide Yokoyama, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 14, 1989, Ser. No. 450,920

Claims priority, application Japan, Dec. 15, 1988, 63-317477

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—298.03 **2 Claims**



1. A sputtering apparatus comprising:

a vacuum container having means connected thereto for maintaining a vacuum in said container;

a gas introducing means for introducing oxygen and argon gas into said vacuum container in the vicinity of a target of a metal to be sputtered;

a plasma generating means connected across the target and a base plate support which are within said vacuum container for forming a plasma near the target;

a heating means directing light onto the target for heating the target;

a temperature sensing means for sensing the temperature of the target; and

means responsive to the sensed temperature of the target for controlling the amount of light directed onto the target for keeping the temperature of the surface of the target at a temperature for keeping the rate of oxidation of the metal of the target constant at the rate of flow of oxygen and argon gas, whereby the oxygen metal ratio on the surface of the target can be kept constant and the oxidation reaction stabilized so as to the make sputtering under a low oxygen partial pressure possible and the composition of the thin layer of metal formed by the sputtering can be made constant over long periods of time.

5,082,546

APPARATUS FOR THE REACTIVE COATING OF A SUBSTRATE

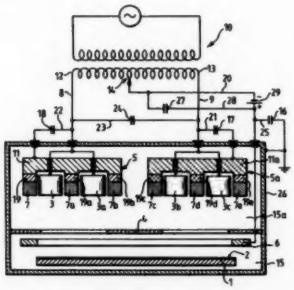
Joachim Szczyrbowski, Goldbach, and Stephan Roegels, Rodenbach, both of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Hanua I, Fed. Rep. of Germany

Filed Feb. 25, 1991, Ser. No. 660,477

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1990, 4042287

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—298.08 **1 Claim**



1. Apparatus for electrically coating a substrate with an electrically insulative material, comprising

an AC power supply having a floating output and comprising a transformer with a secondary winding having a first end terminal, a second end terminal, and a third terminal tapped therebetween,

a DC power supply having a positive pole, a negative pole, and a voltage which corresponds approximately to the effective voltage of the AC power supply, said negative pole being connected to said third terminal,

an evacuable coating chamber,

a first target of electrically conductive material connected to said first terminal via a first connecting line,

a first magnetron cathode electrically insulated from said first target but arranged to attract electrically charged particles toward said first target and electrically connected to said first terminal via a first capacitor,

a second target of electrically conductive material connected to said second terminal via a second connecting line,

a second magnetron cathode electrically insulated from said second target but arranged to attract electrically charged particles toward said second target and electrically connected to said second terminal via a second capacitor,

an anode in said coating chamber and electrically insulated

therefrom, said anode being directly connected to said positive pole of said DC power supply,

means connecting said anode to ground via a third capacitor,

means connecting said anode to said third terminal via a fourth capacitor, and

means connecting said first connecting line to said second connecting line via a fifth capacitor.

5,082,547

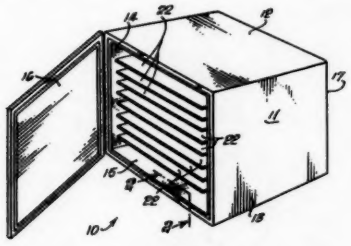
PLASMA ETCHING REACTOR

Gregory W. DeLarge, Garden Grove, Calif., assignor to Plasma Etch, Huntington Beach, Calif.

Filed Feb. 1, 1991, Ser. No. 649,079

Int. Cl.[5] H01H *1/46*; C23F *4/04*; B01J *19/12*

U.S. Cl. 204—298.39 **7 Claims**



1. A plasma etching reactor chamber comprising:

a vacuum chamber including chamber walls with inner surfaces and a door which, when closed, forms an airtight chamber;

a plurality of conductive electrode plates positioned in a parallel manner within said chamber, said plates alternating being charged plates and ground plates; and

shield means on essentially all of the inner surfaces of said chamber walls, said shield means comprising a dielectric layer having an inwardly facing surface and an outwardly facing surface adjacent said inner surfaces of said chamber walls and a conductive layer affixed adjacent said inwardly facing surface of said dielectric layer.

5,082,548

ISOELECTRIC FOCUSING APPARATUS

Daniel M. Faupel, Kingersheim, France, and Pier G. Righetti, Milan, Italy, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 179,619, Apr. 8, 1988, Pat. No. 4,971,670. This application Sep. 4, 1990, Ser. No. 577,421

Claims priority, application United Kingdom, Apr. 11, 1987, 8708746; Dec. 3, 1987, 8728289

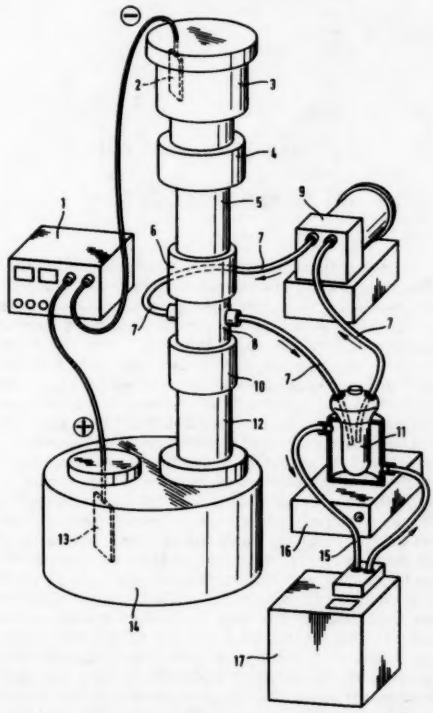
The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—299 R **21 Claims**

1. An isoelectric focusing electrophoretic apparatus suitable for carrying out an isoelectric focusing electrophoretic process for the separation and purification of a desired amphoteric chemical compound, soluble in a solvent suitable for said process, from one or more amphoteric chemical compounds, soluble in said solvent, the isoelectric points of which differ from the isoelectric point of the desired compound by at least 0.001 pH units, said process being carried out by using an electrophoretic apparatus, wherein the electric flow, passing through the electrophoretic matrix, is coupled to a hydraulic flow, the direction of said electric flow being different from that of said hydraulic flow, said hydraulic flow comprising a solution of said desired chemical compound in said solvent, said electrophoretic matrix being segmented into two parts by the hydraulic flow, said parts, independently of each other, representing immobilized pH-gradients **(5)** and **(12)**, each having conductivity and both buffering and titrant capacity in its pH-interval, or amphoteric isoelectric immobilized pH membranes **(25)** and **(26)**, each having conductivity and both buffering and titrant capacity at a specific pH-value, one part **(5)** or **(25)**, being located at the cathodic side and the other, **(12)** or **(26)**, being located at the anodic side, characterized in that said desired chemical compound is kept in an isoelectric state within the hydraulic flow **(7)**, **(8)** and **(11)**, and the undesired amphoteric chemical compounds are removed from the hydraulic flow by the electric flow into at least one of the two parts of said matrix, or through at least one of said parts into at least one of the electrolyte solution reservoirs **(3)** and **(14)**, said apparatus comprising a flow chamber **(8)** connected directly or indirectly either

a) with two containers **(5)** and **(12)** each of which is filled with an immobilized pH-gradient having conductivity and both buffering and titrant capacity in its pH-interval, or



b) with two amphoteric isoelectric immobilized pH-membranes **(25)** and **(26)** having conductivity and both buffering and titrant capacity at a specific pH-value, or

c) with one pH-gradient according to a) above and with one pH-membrane according to b) above, the isoelectric points in the extremities of the pH-gradients or membranes adjacent to the flow chamber **(8)** being equal to or just below the isoelectric point of the amphoteric chemical compound to be purified (anodic side) and equal to or just above the isoelectric point of said amphoteric chemical compound to be purified (cathodic side), one of which pH-gradients or pH-membranes being connected at its other extremity to the anodic chamber **(14)** and the remaining pH-gradient or pH-membrane being connected at its other extremity to the cathodic chamber **(3)**.

5,082,549

MEMBRANE STACK UNIT FOR MULTICHAMBER PROCESSES

Hartwig Voss, Lauenburg; Klemens Kneifel, Geesthacht, and Uwe Martens, Hohnsdorf, all of Fed. Rep. of Germany, assignors to Forschungszentrum Geesthacht GmbH, Geesthacht, Fed. Rep. of Germany

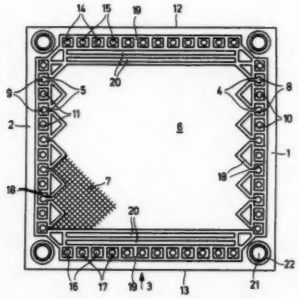
Division of Ser. No. 488,505, Mar. 5, 1990, which is a continuation of Ser. No. 339,941, Apr. 17, 1989, which is a continuation of Ser. No. 498,571, May 26, 1983. This application Nov. 28, 1990, Ser. No. 618,995

Claims priority, application Fed. Rep. of Germany, May 27, 1982, 3219869; Feb. 5, 1983, 3303910

The portion of the term of this patent subsequent to Feb. 5, 2008, has been disclaimed.

Int. Cl.[5] B01D *13/02*

U.S. Cl. 204—301 **9 Claims**



1. A sealing frame for use in a membrane stack unit for performing a multichamber treatment of up to four component fluids, said sealing frame having a square shape and comprising four side edges enclosing a region constituting a treatment chamber, said four side edges including a first side edge, a second side edge opposing said first side edge, a third side edge and a fourth side edge opposing said third side edge, said first, second, third and fourth side edges being respectively provided with first, second, third and fourth sets of an equal number of bores, the positions of the bores relative to each other in each of said first, second, third and fourth sets being substantially the same, the positions of the bores of said second, third and fourth sets of bores relative to a center axis differing from those of respectively corresponding bores of said first set of bores only in being angularly spaced about said center axis from the respectively corresponding bores of said first set of bores by 90°, 180° and 270°, respectively, the bores of said first and second sets of bores consisting of a first subset of through bores along said first side edge for conducting fluid, a second subset of through bores along said second side edge for conducting fluid, a first subset of second bores along said first side edge and a second subset of second bores along said second side edge, the number of second bores in said first subset of second bores and the number of through bores in said second subset of through bores being equal, the number of second bores in said second subset of second bores and the number of through bores in said first subset of through bores being equal, the through bores of said first subset of through bores alternating with the second bores of said first subset of second bores, the through bores of said second subset of through bores alternating with the second bores of said second subset of second bores, the second subset of through bores and the second subset of second bores being angularly spaced about said center axis respectively from said first subset of second bores and said first subset of through bores by 180°, the bores of said third and fourth sets of bores respectively consisting of through bores for conducting fluid, said first and second side edges further having inlet and discharge channels each communicating with a respective one of the second bores of said first and second subsets of second bores and with said chamber, all of the through bores of said first, second, third and fourth sets of bores being isolated from said chamber, whereby when a plurality of sealing frames all substantially identical to said sealing frame are rotated by an integral multiple of 90° relative to an immediately adjacent one of the sealing frames about said center axis so that each bore in each sealing frame is aligned with a corresponding bore in each adjacent sealing frame, with membranes interposed between the sealing frames and each membrane being provided with openings aligned with all of the bores, with two end plates disposed at respective opposite ends of the stack unit with the sealing frames and the membranes interposed therebetween, with bores provided in the end plates to communicate with selected ones of the bores in the sealing frames, and with a plurality of fluid flow channels provided to communicate with the bores in each of the end plates, up to four separate flow paths through the stack unit are obtained.

5,082,550

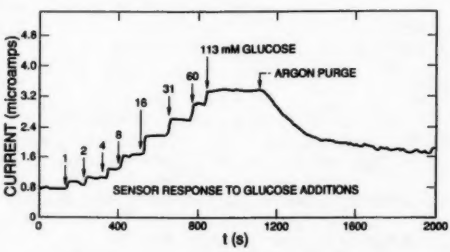
ENZYME ELECTROCHEMICAL SENSOR ELECTRODE AND METHOD OF MAKING IT

Judith Rishpon; Thomas A. Zawodzinski, and Shimshon Gottesfeld, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Dec. 11, 1989, Ser. No. 448,475

Int. Cl.[5] G01N *27/30*

U.S. Cl. 204—403 **9 Claims**



1. An electrochemical sensor electrode, comprising:

an electronic conductor, and

a thin coating on said conductor of a perfluorosulfonic acid polymer having an enzyme dispersed therein effective to catalyze a reaction between a selected substance and oxygen to generate hydrogen peroxide in said polymer for detection at said conductor.

6. A method of making an electrochemical sensor electrode using a selected enzyme to determine the concentration of a predetermined substance, comprising the steps of:

providing an electronic conductor;

providing a perfluorosulfonic acid ionomer in an alcohol solution;

neutralizing said solution to form a pH which does not affect said enzyme;

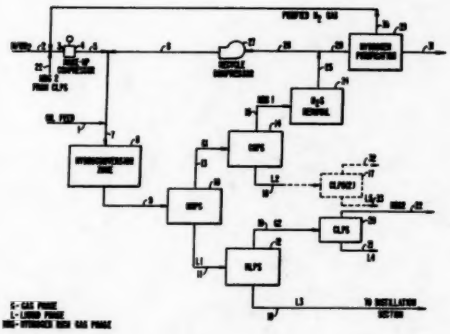
adding said enzyme to said ionomer solution in an amount effective to provide a desired sensitivity for said concentration of said predetermined substance; and

applying said ionomer solution with said enzyme to said conductor.

5,082,551
HYDROCONVERSION EFFLUENT SEPARATION PROCESS

Bruce E. Reynolds, Martinez; Donald A. Bea, Lafayette, and Robert W. Bachtel, El Cerrito, all of Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Continuation of Ser. No. 236,576, Aug. 25, 1988, abandoned. This application Jul. 25, 1990, Ser. No. 560,223
Int. Cl.[5] C10G 67/02, 49/22
U.S. Cl. 208—100 9 Claims



1. A process for separating gases from a hydroconversion zone reaction effluent comprising:

(a) effecting a hot high pressure separation of the effluent by reducing the temperature of the effluent to produce a first gas phase comprising hydrogen, contaminant gases, and gaseous hydrocarbons and a first liquid phase comprising hydrocarbons, and separating the first gas phase from the first liquid phase;

(b) effecting a cold high pressure separation of the first gas phase by reducing the temperature of the first gas phase to form a first hydrogen-rich gas product and a second liquid phase, and separating the second liquid phase from the first hydrogen-rich gas;

(c) effecting a hot low pressure separation of the first liquid phase by reducing the pressure of the first liquid phase to form a second gas phase comprising hydrogen and gaseous hydrocarbons and a third liquid phase comprising hydrocarbons, and separating the second gas phase from the third liquid phase;

(d) effecting a cold low pressure separation of the second gas phase by reducing the temperature thereof to form a second hydrogen-rich and a fourth liquid phase comprising hydrocarbons, and separating the fourth liquid phase from the second hydrogen-rich gas;

(e) recycling the second hydrogen-rich gas to the hydroconversion zone;

(f) subjecting said first hydrogen-rich gas product to the removal of contaminants comprising H_2S to produce a hydrogen-rich, contaminant-removal treated gas and recycling a first portion of said hydrogen-rich, contaminant-removal treated gas to the hydroconversion zone;

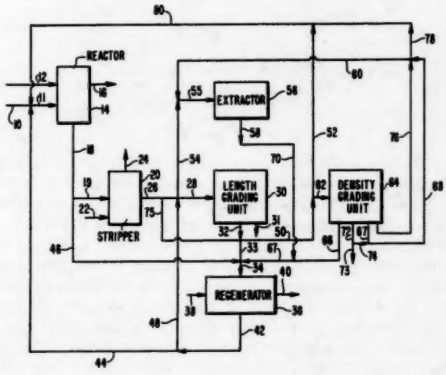
(g) purifying a second portion of said hydrogen-rich, contaminant-removal treated gas to obtain a purified hydrogen-rich gas of at least 95 volume percent hydrogen, wherein the purification is carried out using membranes to separate the purified hydrogen-rich gas from the first hydrogen-rich gas; and

(h) recycling the purified hydrogen-rich gas to the hydroconversion zone.

5,082,552
HYDROTREATING WITH CATALYST PARTICLES USING LENGTH AND DENSITY GRADING

J. Gary Welch, and Robert E. Ellingham, both of Baltimore, Md., assignors to CRI International, Inc., Baltimore, Md.

Continuation of Ser. No. 837,690, Mar. 10, 1986, abandoned. This application Mar. 12, 1990, Ser. No. 491,750
Int. Cl.[5] C10G 45/04, 45/08; B01J 38/72, 23/94
U.S. Cl. 208—216 R 10 Claims



1. A process for treating a spent hydrotreating catalyst comprising shaped, generally cylindrical, regular geometric particles having substantially the same diameter, varying length and an L/D greater than one, said particles having carbonaceous and metallic deposits resulting from a hydrocarbon feedstock which process comprises

passing said particles to a length grading zone comprising a rotating cylindrical drum having inwardly opening indentations in a cylindrical wall thereof, the indentations having a transverse diameter L_1 in the range of 0.8 to about 24 millimeters;

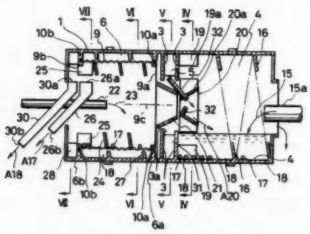
rotating said drum about a longitudinal axis thereof at a speed sufficient to entrap in the indentations and convey particles having a length below L_1 upwardly to a height permitting the particles to fall into a fixed upwardly opening trough, while retaining particles having a length above L_1 in a bottom portion of said drum; conveying the particles in the trough out a first outlet; whereby at last about 80 percent of said particles with a length less than L_1 are separated from the desired particles which ave a length greater than L_1; said particles having a length greater than L_1 comprising relatively uncontaminated particles and heavily contaminated particles;

conveying the particles in the bottom of the said drum out a second outlet, separate from said first outlet to a density grading zone in which said relatively uncontaminated particles are suspended in a gas above said heavily contaminated particles, said heavily contaminated particles are caused to move upwardly along an inclined, vibrating surface and are thereafter collected at a first density grading zone outlet, said relatively uncontaminated particles contact a lower portion of said vibrating surface and are collected at a second density grading zone outlet, withdrawing said relatively uncontaminated particles from a third density grading zone outlet and passing said relatively uncontaminated catalyst particles to a hydrotreating zone, and contacting a hydrocarbon feedstock under hydrotreating conditions.

5,082,553
CONCRETE AGGREGATE COLLECTING APPARATUS

Masao Tanii, 1351, Arao, Arao-shi, Kumamoto-ken, Japan

Filed Dec. 18, 1990, Ser. No. 629,143
Int. Cl.[5] B07B *1/22, 1/50*
U.S. Cl. 209—3 **2 Claims**



1. An apparatus for collecting aggregate having a horizontal-type rotary drum and doughnut-shaped partition plates partitioning the interior of said drum into a mixing and washing tank, an overflow-water transfer tank and a trommel tank which are sequentially arranged from the upstream side of said drum, said apparatus comprising: a meter for measuring the amount of sludge charged in said rotary drum; a speed change gear for a motor for driving said rotary drum, said speed change gear being linked with said meter in such a manner that said meter and said gear are operationally connectable with each other; a trommel concentrically and rotatably disposed in said trommel tank, said trommel being arranged in such a manner that said trommel can be slightly twisted by an angular shift relative to the axis of said trommel; a pair of driving pawls provided at upstream and downstream end positions of said trommel tank; a pair of driven pawls provided at upstream and downstream edge positions of said trommel, said upstream driving pawl being engageable with said upstream driven pawl, said downstream driving pawl being engageable with said downstream driven pawl, said pawls having their respective central angles relative to the axis of said trommel, said central angles being such that the central angle of at least one of the mutually engageable driving and driven pawls at the upstream positions is different from the central angle of the corresponding one of the mutually engageable driving and driven pawls at the downstream positions; and an inspection window with a door which is provided at a position on the outside of said trommel.

5,082,554
FLOTATION PROCESS USING METAL SALTS OF PHOSPHORUS ACIDS

James H. Bush, and Alan C. Clark, both of Mentor, Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jun. 15, 1990, Ser. No. 538,959
Int. Cl.[5] B03D *1/014, 1/02*
U.S. Cl. 209—166 **27 Claims**

1. A gold recovery process comprising the steps of:

(1) forming a slurry comprising a gold-containing ore, water and a collector which is at least one metal salt of a phosphorus acid represented by the Formula:

$$(R_1)_2\text{—}\overset{\overset{X}{\|}}{P}\text{—}XH \qquad (I)$$

wherein each R_1 is independently a hydrocarbyl, hydrocarbyloxy or hydrocarbylthio group having from to 1 to about 18 carbon atoms, each X is independently oxygen or sulfur, and wherein the metal is (i) at least one single metal selected from the group consisting of Group IIB–VIIB and VIII metals two or (ii) at least one mixture of metals wherein at least one of the metals is selected from the group consisting of IIB–VIIB and VIII metals.

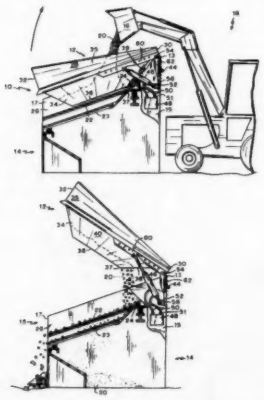
(2) subjecting the slurry from step (1) to froth flotation to produce a froth; and

(3) recovering gold from the froth.

5,082,555
SOIL FEEDING APPARATUS AND METHOD

James L. Read, Cohasset, Mass., assignor to The Read Corporation, Middleboro, Mass.

Filed Jan. 26, 1990, Ser. No. 470,619
Int. Cl.[5] B07B *1/00*
U.S. Cl. 209—244 **30 Claims**



1. A soil feeder apparatus for use above an angled screen soil separating apparatus and adapted to feed soil material to be separated over a time period onto the angled screen of the soil separating apparatus for separation, which soil feeder apparatus comprises:

a) a hopper body having a one and other end and a bottom tray surface and a plurality of walls to define a space within the hopper body to receive soil material;

b) the bottom surface characterized by an opening extending substantially across the width of the hopper body at and adjacent to the one end to permit soil material to pass through the opening;

c) the hopper body having a pair of outwardly extending angled side means on opposite walls to direct soil material into the hopper body;

d) means to tilt the hopper body about an axis at the one end between a generally horizontal soil material loading position above the soil separating apparatus, and an angled soil material discharging position;

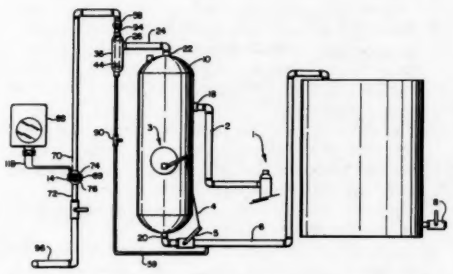
e) timing means to activate the means to tilt for a defined time period and to return rapidly the hopper body to the generally horizontal, soil material loading position, thereby providing automatically for the effective and controlled feeding of the soil material to the soil separating apparatus wherein the opening is exposed to discharge soil onto the angled screen of the soil separating apparatus, the timing means activating the time period for movement of the hopper body between a soil material loading position and a soil material discharging position and a return to the soil material loading position and;

f) a bracket means to mount the hopper body on a soil separating apparatus to permit the hopper body to move between a soil material loading position wherein the opening is adapted to be placed adjacent the soil separator apparatus to close the opening and on tilting to a soil material discharging position.

5,082,556
SEPARATOR, FLOAT SHUT-OFF VALVE, AND ORIFICE METER MOUNTED AS A UNIT OF SKID

Martin W. Reese, 4280 Dillon Hills Dr., Nashport, Ohio 43830

Filed Oct. 11, 1990, Ser. No. 596,020
Int. Cl.[5] B01D *19/00*
U.S. Cl. 210—90 20 Claims



1. In combination, a supply of gas connected by a first duct to a liquid separator tank, said tank having upper and lower sections, a second duct in fluid communication with the upper section of the tank extending into a drip collecting float shut-off valve, said valve having inlet and outlet openings, a third duct in fluid communication with said valve outlet and extending into an orifice meter,

liquid and solid particles separating from gas in said separator tank and settling to the lower section,

said valve including a reservoir, said reservoir serving as a repository for liquid and solid particles conveyed by said second duct through said valve inlet, said liquid and solid particles settle by gravity into said reservoir,

a float ball in said reservoir, said ball being of less density than the liquid in said reservoir and said ball having a diameter greater than the valve outlet, said reservoir being configured to direct said ball toward said valve outlet as it floats on said liquid in said reservoir, said ball and valve outlet being configured to have the ball seal the valve outlet when the reservoir is full of liquid and solid particles,

an outlet valve means for exhausting liquid and solid particles from said reservoir, and

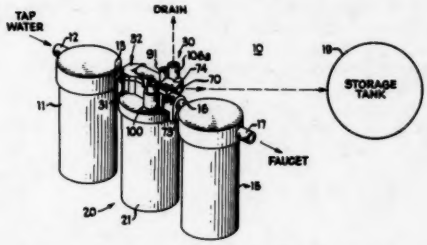
said orifice meter including said third duct having an axis, means forming an orifice in said third duct, said orifice having a cross-sectional area less than the cross-sectional area of said third duct, means for making pressure measurements in said third duct both upstream and downstream of said orifice means for preventing liquid from collecting in said third duct adjacent the upstream side of said orifice.

5,082,557
CONTROL HEAD FOR WATER PURIFIER

John R. Grayson, Inverness, and David Pettinato, Schaumburg, both of Ill., assignors to RainSoft Water Conditioning Co., Elk Grove Village, Ill.

Filed Apr. 2, 1990, Ser. No. 503,154
Int. Cl.[5] B01D *61/12*
U.S. Cl. 210—109 20 Claims

15. In a water purifying apparatus including a purifying unit, means defining flow paths among the unit and a source of tap water and a purified water storage tank and a waste water drain and accommodating flow of purified water from an outlet of the purifying unit to the storage tank, and a normally-open inlet valve disposed in a flow path from the source to the inlet of the purifying unit for controlling the flow of tap water from the source to the purifying unit and closable in response to the filling of the storage tank to a first predetermined volume to shut off the supply of tap water, the improvement comprising: means defining a bypass path between the outlet of the purifying unit and the waste water drain, normally-closed bypass valve means for controlling the flow of water through said bypass path, and means for opening said bypass valve means to cause purified water to flow through said bypass path to the waste water drain instead of to the storage tank, thereby



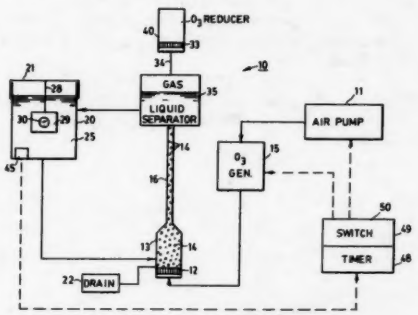
to prevent filling of the storage tank to the first predetermined volume and consequent closure of the inlet valve.

16. The apparatus of claim 15, wherein said means for opening said bypass valve means includes means responsive to filling of the storage tank to a second predetermined volume less than the first predetermined volume.

5,082,558
COMPACT CONTACT LENS PURIFICATION SYSTEM USING OZONE GENERATOR

William A. Burris, 7 E. Jefferson Cir., Pittsford, N.Y. 14534

Filed Aug. 31, 1990, Ser. No. 575,622
Int. Cl.[5] A61L *2/20;* A61F *9/00*
U.S. Cl. 210—167 56 Claims



1. A contact lens purification system comprising:

a. a chamber containing a contact lens submerged in a liquid configured and arranged for purification system;

b. a generator arranged for producing an ozone containing gas;

c. a liquid circulation passageway arranged for leading said liquid from said chamber to a junction;

d. an output gas passageway leading said ozone containing gas from said generator to said junction;

e. said liquid circulation passageway being arranged for leading said liquid from said junction back to said chamber;

f. a pumping system arranged for causing said liquid to flow through said liquid circulation passageway and causing said ozone containing gas to contact said liquid at said junction for dissolving ozone in said liquid in regions downstream of said junction; and

g. said liquid and gas passageways and said pumping system being sized to determine the flows of said liquid and said ozone containing gas.

13. The purification system of claim 1 including a filter arranged in said liquid passageway.

5,082,559

GLASS CHROMATOGRAPHY CAPILLARY WITH RELATIVELY THICK COATING

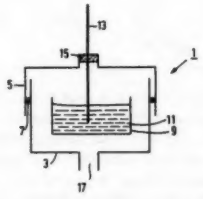
Shuji Eguchi, Hitachi city, Japan; Johan G. Kloosterboer, Eindhoven, Netherlands, and Dirk J. Broer, Wilmington, Del., assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 18, 1990, Ser. No. 554,760

Claims priority, application Netherlands, Aug. 25, 1989, 8902151

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—198.2 **2 Claims**



1. A separation column comprising a glass capillary having an internal diameter of maximally 10 μm which is coated with a polymer film on the inside, wherein in the ratio between the volume of the polymer film and the internal volume of the capillary after the polymer film has been applied is larger than 0.14.

5,082,560

METHOD AND APPARATUS FOR TREATING A LIQUID MIXTURE

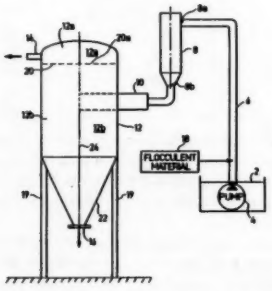
Nissim Eli, and Albert Marrache, both of Herzelia, Israel, assignors to Odis Irrigation Equipment Ltd., Kiryat Arye, Petah Tikva, Israel

Filed Mar. 9, 1990, Ser. No. 457,547

Claims priority, application Israel, Mar. 20, 1989, 89685

Int. Cl.[5] B01D *21/26, 21/01*

U.S. Cl. 210—206 **9 Claims**



1. Apparatus for treating a liquid mixture to separate a clarified fraction therefrom leaving a concentrated sludge fraction, comprising:

a vertical tank having a perforated plate spaced from its upper end dividing the tank into an upper chamber and a lower chamber;

means for injecting a flocculent material in the liquid mixture;

a tangential inlet in said lower chamber of the vertical tank at a location substantially above its bottom for inletting the liquid mixture and flocculent material tangentially into the lower chamber to produce a flow in said lower chamber having a rotational velocity in the horizontal direction adjacent to the outer periphery of said lower chamber, and a lower rotational velocity in the horizontal direction adjacent to the center of said lower chamber;

the holes in said perforated plate defining reduced-area passages from the lower chamber to the upper chamber producing a vertical flow of low velocity in the lower chamber and of higher velocity through said passages, whereby the flocculent material flocks with most of the solid particles in the liquid mixture at the lower part of the lower chamber and with the remaining solid particles at the upper part of the lower chamber, such that a clarified fraction passes through the holes in the plate to the upper chamber, leaving a concentrated sludge fraction in the lower chamber;

a radial outlet in the upper chamber for outletting the clarified fraction therefrom to produce a radial flow of the clarified fraction in the upper chamber radially across the perforated plate thereby permitting settling of solid particles in the clarified fraction through the perforated plate back to the lower chamber; and

an outlet in the bottom of the lower chamber for outletting the concentrated sludge fraction therefrom.

5,082,561

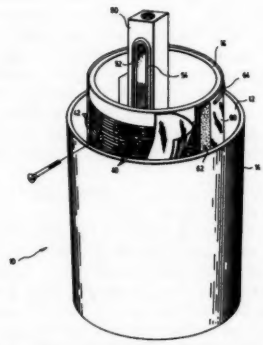
HIGH PRESSURE FILTER SUPPORTS FOR LIQUIDS, SYSTEMS THEREWITH AND METHODS OF USE

Donald LaPierre, 167A, rue Principale, Saint-Ludger, Beauce-Sud Qc, Canada

Filed Sep. 17, 1990, Ser. No. 583,097

Int. Cl.[5] B01D *29/19, 35/30, 27/08*

U.S. Cl. 210—232 **11 Claims**



9. A high pressure filter support for a liquid having low or high viscosity, said support being easily cleanable, quickly dismountable and comprising:

an annular passage defined between an outer larger tubular wall and an inner smaller tubular wall,

top and bottom flat plates including quick release fastening means for sealingly joining said top plate to said outer and inner tubular walls to sealingly close said annular passage;

inlet means into said annular passage,

said inner wall inside the annular passage having an outer surface within said annular passage and an inner surface, said outer surface having a plurality of circumferential grooves, each of said grooves having at least one orifice through said inner wall, said orifices being of a size commensurate with the viscosity of the material to be displaced through said orifices, and

outlet means sealingly mounted on the inner surface of said inner wall away from said annular passage for receiving the liquid passing through said orifices,

wherein each of said circumferential grooves of said inner wall leads into one orifice through said inner wall, said

orifices forming a row, and wherein said outlet means is an elongated pressurizable channel, said channel being U-shaped and being provided along its periphery joining the outer surface of the inner wall with a groove for receiving an O-ring, an O-ring in said groove sealingly closing said U-shaped channel to said inner wall, over said orifices,

said inner wall further comprising fastening means to urge said channel against said inner smaller tubular wall.

5,082,562

DEHYDRATION PRESS

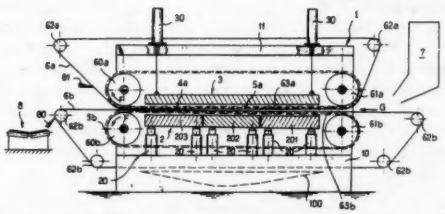
Raymond Burger, 7 place de la Fleur, 68160 Sainte Marie Aux Mines, France

Filed Aug. 13, 1990, Ser. No. 566,948

Claims priority, application France, Aug. 25, 1989, 89 11360

Int. Cl.[5] B01D *33/052*; B30B *9/24*

U.S. Cl. 210—401 **8 Claims**



1. A dehydration press of the type comprising a pair of moving endless filter bands having two approximately parallel lengths sandwiching the material to be dehydrated and clamped between two presser plates each of which acts against a corresponding length of one of the filter bands via a crawler track comprising a set of plane shoes which are hinged to one another about axes that are perpendicular to the direction of the crawler track advance, sealing means being provided along the edges of said lengths of the filter bands in order to confine the material therein, wherein each presser plate is associated with a plurality of endless bearing chains disposed parallel to one another and driven together, each of said bearing chains having a series of wheels which are free to rotate and which are interposed between respective ones of said presser plates and the crawler tracks.

5,082,563

METHODS FOR CLEANING UP LIQUIDS USING ABSORBENT PELLETS

John L. Webb, Richmond; Robert D. Kilgore, Rosharon, and Shitalprasad N. Patil, Houston, all of Tex., assignors to International Cellulose, Inc., Houston, Tex.

Filed Jul. 20, 1989, Ser. No. 383,167

Int. Cl.[5] C02F *1/28*

U.S. Cl. 210—631 **11 Claims**

2. A method for absorbing a first liquid floating in or on a second liquid, the method comprising the steps of

introducing into the first liquid absorbent cellulose pellets for absorbing the first liquid,

the pellets having an irregular shape and a density ranging between about 20 to about 30 pounds of cellulose per cubic foot of pellets,

the pellets maintaining their position in the first liquid while absorbing it,

the pellets sinking beneath the first liquid after absorbing some of the first liquid, and

introducing a surfactant onto the first liquid and absorbent pellets to facilitate sinking of the pellets after the pellets have absorbed an amount of the first liquid.

5,082,564

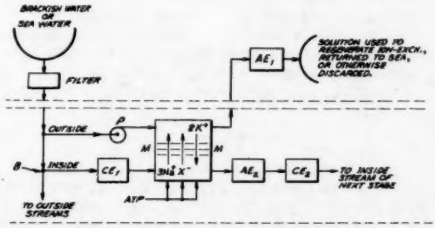
METHOD AND MEANS FOR DESALINATION OF SEAWATER AND BRACKISH WATER

Albert H. Halff, 3514 Rock Creek Dr., Dallas, Tex. 75225, and Allen F. Reid, 4736 Reservoir Rd., Geneseo, N.Y. 14454

Filed Jan. 22, 1991, Ser. No. 643,261

Int. Cl.[5] C02F *1/44*

U.S. Cl. 210—638 **28 Claims**



3. A method of desalinating water which comprises the steps of forming a stream of saline water, moving at least a portion of the stream through the inside of a transport membrane, causing ions to be removed from the stream and transporting the ions from the inside to the outside of the membrane, powering said ion transporting with a chemical reaction, dividing said saline water into inside and outside streams, with the inside stream moving through the inside of said membrane and the outside stream moving across the outside of the membrane, ions are caused to cross the membrane from one stream to another, more ions are caused to move from the inside stream to the outside stream than are caused to move from the outside stream to the inside stream, and said ion transporting is powered by an Na,K-pump.

5,082,565

SEMIPERMEABLE MEMBRANE MADE FROM POLYETHER KETONES

Michael Haubs, Bad Kreuznach; Hansotto Drotloff, Frankfurt am Main, and Juergen Wildhardt, Huenstetten-Wallrabënstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

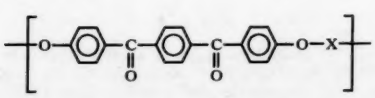
Filed Nov. 7, 1990, Ser. No. 610,020

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1989, 3936997

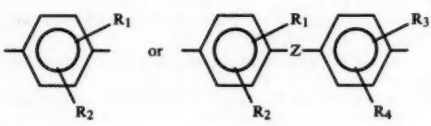
Int. Cl.[5] B01D *61/00, 39/00*

U.S. Cl. 210—650 **13 Claims**

1. A process for producing a semipermeable membrane comprising a polyether ketone that possesses recurring units of the following formula:



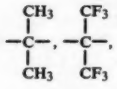
where X is



in which

R_1, R_2, R_3 and R_4 are identical or different and are selected from the group consisting of H, alkyl, aryl, oxyaryl, NO_2, CN, NR_2 or halogen, and

Z is one of the groupings —O—, —S—, —CH_2—, —CF_2—,



—SO_2— or —CO— the process comprising the steps of:

dissolving the polymer in a solvent;

filtering and degassing the polymer; and then

producing a membrane employing the phase inversion process, wherein the solvent is selected from the group consisting of H_2SO_4, CF_3—SO_3H, HF, Cl_2HC—COOH and a mixture of Cl_2HC—COOH and H_2SO_4.

5,082,566

CALCIUM-PHOSPHATE TYPE HYDROXYAPATITE FOR CHROMATOGRAPHIC SEPARATION AND PROCESS FOR PRODUCING SAME

Nobuaki Tagaya, Kawagoe; Hideyuki Kuwahara, Oi; Takao Hashimoto, Oi; Noriko Komatsu, Oi; Keiko Fukamachi, Mitaka; Tsugio Maeshima, Saitama; Toshihiro Ishikawa, and Tetsuro Ogawa, both of Tokyo, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha and Asahi Kogaku Kabushiki Kaisha, both of Tokyo, Japan

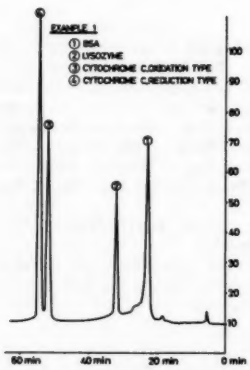
Division of Ser. No. 909,978, Sep. 22, 1986, Pat. No. 4,781,904. This application Sep. 12, 1988, Ser. No. 243,550

Claims priority, application Japan, Sep. 23, 1985, 60-209561

The portion of the term of this patent subsequent to Nov. 1, 2006, has been disclaimed.

Int. Cl.[5] B01D *15/08;* **C01B** *25/32*

U.S. Cl. 210—656 **25 Claims**



16. A process comprising using a calcium-phosphate hydroxyapatite as a column packing material for chromatographic separation wherein said hydroxyapatite is in the form of spherulites having a mean particle diameter of 0.5 to 50 μm and a crystallite size ranging from 0.01 to 0.05 μm wide and from 0.05 to 0.3 μm long.

21. A column for chromatographic separation, at least partially filled with a packing material, wherein said packing material comprises a calcium-phosphate hydroxyapatite in the form of spherulites having a mean particle diameter of 0.5 to 50 μm and a crystallite size ranging from 0.01 to 0.05 μm wide and from 0.05 to 0.3 μm long.

5,082,567

REGENERATION OF CATIONIC EXCHANGE RESINS

Sharon D. Fritts, Youngstown, and Tilak V. Bommaraju, Grand Island, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Nov. 8, 1990, Ser. No. 610,626

Int. Cl.[5] B01D *15/04*

U.S. Cl. 210—673 **12 Claims**

1. In a process for treating a solution that contains chlorate ions with a cationic exchange resin, thereby producing a chlorate ion containing cationic exchange resin, a method of regenerating the chlorate ion containing cationic exchange resin comprising treating said resin with an acidic regenerating solution containing sulfite in an amount at least stoichiometric with the amount of chlorate on said resin.

5,082,568

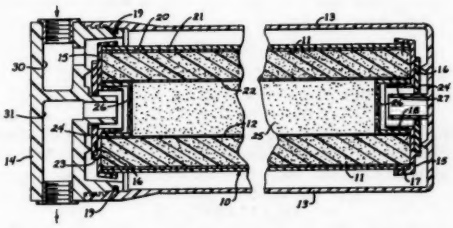
METHOD FOR REMOVING LOW CONCENTRATIONS OF METAL CONTAMINANTS FROM WATER

Thomas D. Holler, Sheboygan, Wis., assignor to Ametek, Inc., Sheboygan, Wis.

Division of Ser. No. 325,245, Mar. 17, 1989, Pat. No. 5,024,764. This application Feb. 14, 1991, Ser. No. 655,118

Int. Cl.[5] C02F *9/00*

U.S. Cl. 210—679 **11 Claims**



1. A method for removing low concentrations of heavy metal ions from a supply of water comprising the steps of:

(a) passing the water supply through a block of bonded activated carbon to initially remove a portion of the heavy metal ions;

(b) directing the water supply from said carbon block through a bed containing a non-selective cation deionizing resin in hydrogen form to remove a portion of the cations contained therein, including a portion of the heavy metal ions passing through said carbon block, and to convert said deionizing resin to a heavy metal-selective ion exchange resin; and,

(c) continuing to direct the water supply from said carbon block through said converted resin bed to remove a portion of said heavy metal ions by ion exchange with less reactive cations in said ion exchange resin.

5,082,569

REMOVAL OF METALS FROM LIQUEFIED HYDROCARBONS

Edwin H. Homeier, Elmhurst; Peter O. Hennes, Palatine, and Padma V. Tota, Naperville, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed Dec. 3, 1990, Ser. No. 620,804
Int. Cl.[5] B01D *15/04*
U.S. Cl. 210—679 5 Claims

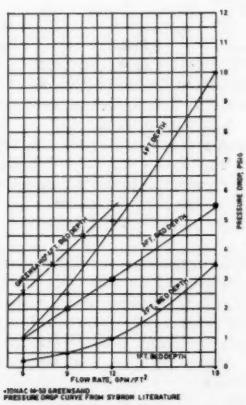
1. A method of reducing the concentration of a metal, selected from the group consisting of mercury, antimony, lead, arsenic and copper, to no more than about 0.1 parts per billion in a first liquid hydrocarbon stream containing as high as about 5 parts per million of the metal, comprising contacting the first liquid hydrocarbon stream sequentially with a bed of a cation exchange resin which does not contain mercaptan or polysulfide moieties and a bed of a zeolitic molecular sieve surface-impregnated with ionic or elemental silver, and thereafter recovering a second liquid hydrocarbon stream having reduced metal concentration.

5,082,570

REGENERABLE INORGANIC MEDIA FOR THE SELECTIVE REMOVAL OF CONTAMINANTS FROM WATER SOURCES

Irwin R. Higgins, and Mark S. Denton, both of Anderson County, Tenn., assignors to CSA Division of Lake Industries, Inc., Oak Ridge, Tenn.

Continuation-in-part of Ser. No. 598,987, Oct. 17, 1990, which is a continuation-in-part of Ser. No. 316,810, Feb. 28, 1989, abandoned. This application Dec. 24, 1990, Ser. No. 633,029
Int. Cl.[5] C02F *1/42*
U.S. Cl. 210—683 14 Claims



1. A microporous regenerable oxidizing/reducing and absorbent media for the removal of heavy metals and other contaminants from water sources, said media being battery grade gamma form electrolytic manganese dioxide that has been comminuted and sized to 20–60 mesh, neutralized to about pH 7–8, washed to remove fine particles to less than about 0.12% and to remove residual acidity and neutralization reaction products, and completely dried prior to use for said removal of said contaminants.

14. A method for the preparation of a microporous regenerable inorganic oxidizing/reducing and adsorbent media for use in the removal of heavy metals and other contaminants from water sources, which comprises the steps:

comminuting battery grade gamma-form electrolytic manganese dioxide;

sizing said comminuted electrolytic manganese dioxide to 20–60 mesh on 20–60 mesh screens;

neutralizing said sized electrolytic manganese dioxide to about pH 7–8 with sodium hydroxide while maintaining said sized electrolytic manganese dioxide with a 60 mesh exit screen in a rotating drum;

washing said neutralized electrolytic manganese dioxide with water in said rotating drum to remove fine particles to less than about 0.12% and to remove residual acidity and neutralization reaction products; and

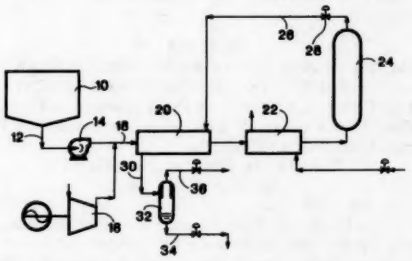
completely drying said washed material in a rotary kiln.

5,082,571

CAUSTIC SULFIDE WET OXIDATION PROCESS

David A. Beula, Schofield; Joseph A. Momont, Mosinee, and William M. Copa, Schofield, all of Wis., assignors to Zimpro Passavant Environmental Systems Inc., Rothschild, Wis.

Filed May 13, 1991, Ser. No. 698,868
Int. Cl.[5] C02F *1/72, 11/08*
U.S. Cl. 210—739 6 Claims



1. A process for treatment of a caustic sulfide liquor by wet oxidation in a nickel-based alloy system comprising the steps:

a) analyzing the caustic sulfide liquor for initial concentrations of total alkalinity, total sulfides, mercaptans, COD, thiosulfate, total carbonate and pH to determine the amount of nonsulfidic alkalinity consumed by said liquor upon wet oxidation treatment;

b) adding sufficient additional nonsulfidic alkalinity to said caustic sulfide liquor whereby the initial nonsulfidic alkalinity concentration plus additional nonsulfidic alkalinity concentration exceeds the nonsulfidic alkalinity consumed upon wet oxidation treatment as determined in step a; and

c) carrying out said treatment process of wet oxidation upon said caustic sulfide liquor within said nickel-based alloy system to destroy sulfides and mercaptans and produce a treated liquor with excess nonsulfidic alkalinity concentration thereby preventing excessive corrosion to said nickel-based alloy wet oxidation system.

5,082,572

ASH VIBRATION PROCESS AND APPARATUS

John K. Schmidt, Moorseville, Ind., assignor to Ogden Martin Systems, Inc., Fairfield, N.J.

Filed Sep. 5, 1990, Ser. No. 577,365
Int. Cl.[5] C02F *1/34;* B01D *43/00*
U.S. Cl. 210—744 6 Claims

4. A method for dewatering combustion materials comprising the steps of:

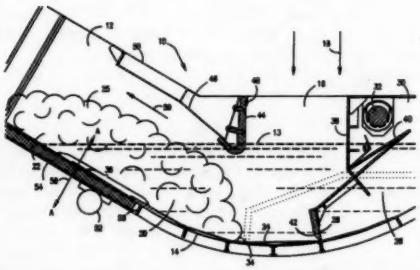
providing said combustion materials to a curved section of a quench bath;

quenching said materials in a quenching liquid in said curved portion;

moving said combustion materials up an inclined trough out of said curved portion and out of contact with said quenching liquid;

vibrating said inclined trough to substantially compress and dewater said combustion materials whereby a reduction in the amount of free water run-off and a reduction in the

thixotropic properties of said combustion materials are achieved; and



timing said vibrating step to correspond to said movement of said combustion materials up said inclined trough.

5,082,573

METHOD FOR DETOXIFYING AMMONIA AND CHLORAMINE IN AQUATIC ENVIRONMENTS

Joel M. Goldstein, Ambler; Vina Patel, Lansdale, and Steven J. Wiley, Willow Grove, all of Pa., assignors to Aquarium Pharmaceuticals, Inc., Chalfont, Pa.

Filed Jul. 24, 1990, Ser. No. 557,252

Int. Cl.[5] C02F *1/20*

U.S. Cl. 210—749 **21 Claims**

1. A method for detoxifying ammonia in an ammonia-containing aquatic system having a pH suitable for aquatic life comprising adding to the system an amine-based ammonia detoxifying solution in an amount effective to detoxify substantially all of the ammonia in the system, the solution being non-toxic and comprising an amine based compound selected from the group consisting of alkanolamines and polyamines, the solution being acidified to pH suitable for aquatic life.

5,082,574

APPARATUS FOR TREATMENT OF MATERIAL WITH LIQUID WITH STIRRER DRIVEN VORTEX FLOW

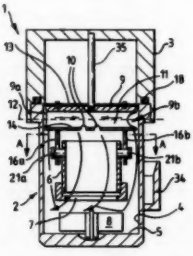
Alan Carrol, London, United Kingdom, assignor to Trenchbond Limited, London, England

Filed Jul. 12, 1989, Ser. No. 378,825

Claims priority, application United Kingdom, Jul. 18, 1988, 8817036

Int. Cl.[5] B01D *17/038*

U.S. Cl. 210—787 **19 Claims**



3. An apparatus for treatment of material with liquid comprising:

a container comprising a bottom portion and a lid portion, the container having defined therein a substantially cylindrical chamber having a longitudinal axis, an interior and a side;

a receptacle for holding the material to be treated, said receptacle having a bottom wall permeable to a treatment liquid to be used in the apparatus, said bottom wall being arranged above the bottom portion of the container;

stirring means capable of driving up the side of the chamber a vortex of said liquid having a direction of flow, the surface of said liquid at rest being lower than the bottom wall of the receptacle; and

a duct member arranged diametrically across the interior of the chamber above the receptacle at a height to which the liquid vortex in the chamber can be driven by the stirring means, the duct member comprising an elongate element defining a longitudinal bore having an axis which lies below the center of the duct member whereby the element defining the bore is thicker above the bore than below the bore, the duct member being suspended by a suspension member which lies along the longitudinal axis of the chamber and which has a first end portion threaded above the bore into the element defining the bore and another end portion coupled to the container, the end portion of the suspension member being threaded such that during treatment the vortex urges the duct member more tightly onto the suspension member, wherein the duct member has opposite ends, each of said ends comprising an inlet disposed for ingress of said liquid forming the vortex into the duct member, the duct member having outlet means arranged to pour said liquid onto material in the receptacle.

19. A method of treating a material with a liquid, comprising the steps of:

placing the material in the receptacle of the apparatus defined in any one of claims **3**, **16** or **18**;

filling the container with the liquid to a level below the bottom wall of the receptacle;

operating the apparatus to form the vortex; and

subsequently removing the treated material and liquid from the receptacle.

5,082,575

METHOD FOR FIRE-EXTINGUISHMENT ON HARDLY EXTINGUISHABLE BURNING MATERIALS

Hisayoshi Yamaguchi, Tokyo, Japan, assignor to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 249,316, Sep. 26, 1988, abandoned. This application Mar. 22, 1990, Ser. No. 497,422

The portion of the term of this patent subsequent to Nov. 7, 2006, has been disclaimed.

Int. Cl.[5] A62D *1/00*

U.S. Cl. 252—2 **7 Claims**

1. A method for extinguishment of fire on a hardly fire-extinguishable material selected from the group consisting of alkali metal peroxides, alkyl aluminum compounds, diketene, calcium carbide and calcium phosphide which comprises:

sprinkling, over the burning site of the fire, a silica-based powder of porous particles containing at least 80% by weight of silica or a silica.alumina-based powder of porous particles containing at least 90% by weight of silica and alumina as a total, of which the porous particles have a particle diameter in the range from 5 μm to 5 mm, an apparent density in the range from 0.2 g/cm^3 to 0.7 g/cm^3 and a pore diameter in the range from 0.1 μm to 100 μm.

5,082,576

REMOVAL OF SULFIDES USING CHLORITE AND AN AMPHOTERIC AMMONIUM BETAINE

Mark R. Howson, Hull, England, assignor to BP Chemicals Limites, London, England

Filed Mar. 9, 1990, Ser. No. 491,355

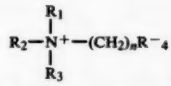
Claims priority, application United Kingdom, Mar. 21, 1989, 8906406

Int. Cl.[5] C10G *27/02*

U.S. Cl. 507—130 **10 Claims**

1. A composition suitable for use as a sulfide scavenger, said composition comprising an aqueous solution of a chlorite and

a corrosion inhibitor, characterized in that the corrosion inhibitor is an amphoteric compound of the formula:



(I)

wherein each of R_1, R_2 and R_3 is the same or different group selected from H, C_1–C_{24} alkyl, aryl, halogen, hydroxy, alkoxy, carbonylic and heterocyclic group formed by a combination of at least two of R_1, R_2 and R_3 and the nitrogen atom, said heterocyclic group optionally containing additional heteroatoms, R_4 is a carboxylic or a sulphonic acid group, and n has a value from 1–9.

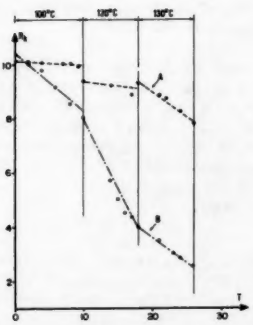
9. A process for the removal of sulfide contaminant in a feed comprising liquid or gaseous streams or in storage tanks forming part of a chemicals processing plant, said process comprising contacting the feed with a composition as claimed in claim 1 at a temperature ranging from ambient to 150° C.

5,082,577

METHOD AND COMPOSITION FOR SELECTIVELY REDUCING PERMEABILITY TO WATER IN HYDROCARBON RESERVOIRS WHICH ARE HOT AND SALINE

Norbert Kohler, Villennes sur Seine, and Alain Zaitoun, Rouen, both of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Dec. 20, 1990, Ser. No. 630,579
Claims priority, application France, Dec. 21, 1989, 89 17161
Int. Cl.[5] E21B *43/22*
U.S. Cl. 252—8.551 **27 Claims**



1. A method of selectively reducing permeability to water as opposed to hydrocarbons in an underground formation producing at least one of oil and gas at a temperature of 70° to 130°, consisting essentially of injecting an aqueous composition through an injecting well or a producing well into said underground formation at 70°–130° C. surrounding the water injecting well or the hydrocarbon producing well, at a basic pH, said aqueous composition consisting essentially of at least one nonionic polysaccharide at a concentration (by weight) of 180 to 5000 parts per million of solution and at least one aldehyde compound at a concentration (by weight) of 200 to 20,000 parts per million parts of solution, the aldehyde compound being different from said polysaccharide and at a higher concentration than the polysaccharide, said aqueous solution being essentially free of gel formation from a reaction between the non-ionic polysaccharide and the aldehyde compound.

5,082,578

FABRIC CARE COMPOSITIONS CONTAINING A POLYMERIC FLUORESCENT WHITENING AGENT

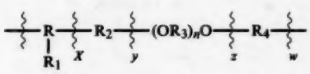
Matthew E. Langer, New City, N.Y.; Ferial Khorshahi, Leonia, N.J.; Michael P. Aronson, West Nyack, N.Y., and John F. Hessel, Metuchen, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Dec. 11, 1990, Ser. No. 626,074
Int. Cl.[5] C11D *9/44, 3/37;* D06M *11/59, 13/17*
U.S. Cl. 252—8.7 **22 Claims**

1. A fabric care composition comprising:

(a) from about 1% to about 75% by weight of a surfactant selected from the group consisting of soap, nonionic surfactant, anionic surfactant, ampholytic surfactant, zwitterionic surfactant, cationic surfactant and mixtures thereof; and

(b) a copolymer whitening agent having the formula



wherein:

R is a difunctional aryl group or a difunctional straight or branched alkyl chain having 4 to 16 carbons;

R_1 is hydrogen, an aliphatic group having 1 to 20 carbons, an aryl, an alkaryl, a secondary amine, an alkali metal sulfonate, an alkali metal carboxylate, an alkyl ether or a halogen atom;

R_2 is a straight or branch chain alkoxy group having 1 to 16 carbons, an aryloxy or a substituted aryloxy group;

R_3 is a straight or branch chain alkyl group having 1 to 16 carbons; and

R_4 is a difunctional fluorescent moiety;

x is selected such that the difunctional hydrophobic group is present at 0–49 mol% of the composition mixture when the copolymer is polymerized;

y is selected such that the R_2 group is present at 0–45 mol% of the mixture;

z is selected such that the $(OR_3)_n$ group is present at 5–45 mol% of the mixture wherein n is an integer between 2 and 200; and

w is selected such that the R_4 group is present at 1–50 mol% of the reaction mixture.

5,082,579

METHOD AND COMPOSITION FOR DELAYING THE GELLATION OF BORATED GALACTOMANNANS

Jeffrey C. Dawson, Katy, Tex., assignor to BJ Services Company, Houston, Tex.

Filed Jan. 16, 1990, Ser. No. 465,903
Int. Cl.[5] E21B *43/26*
U.S. Cl. 252—8.551 **6 Claims**

1. A method of controlling the cross-linking reaction of an aqueous fracturing fluid in fracturing a subterranean formation, comprising the steps of:

blending together an aqueous fluid and a hydratable polymer capable of gelling in the presence of borate ions;

allowing the polymer to hydrate to form a hydrated polymer sol;

adding an alkaline buffer to thereby adjust the pH of the hydrated polymer sol in the range from about 8.0 to 11.5;

forming a complexor solution for said hydrated polymer gel by combining a cross-linking additive capable of furnishing borate ions in solution with a delay additive selected from the group consisting of dialdehydes having about 2–4 carbon atoms, keto aldehydes having about 3–4 carbon atoms hydroxyl aldehydes having 2–4 carbon atoms, ortho substituted aromatic dialdehydes and ortho substituted aromatic hydroxyl aldehydes, the delay additive being effective, to chemically bond wit the borate ions and boric acid produced by the cross-linking additive to

thereby limit the number of borate ions available in solution for subsequent cross-linking of the hydrated polymer sol;

adjusting the pH of the complexor solution to achieve a desired delay in the cross-linking reaction of the hydrated polymer gel, the delay achieved being a function of the complexor solution pH, wherein upward adjustment of the pH of the complexor solution serves to retard the rate of the subsequent cross-linking of the hydrated polymer sol while downward adjustment of the pH of the complexor solution serves to accelerate the rate of subsequent cross-linking; and

adding the complexor solution to the hydrated polymer sol to cross-link the hydrated polymer sol.

5,082,580

Patent Not Issued For This Number

5,082,581

AQUEOUS MAGNETIC FLUID COMPOSITION AND PROCESS FOR PRODUCING THEREOF

Toshikazu Yabe, Fujisawa, and Atsushi Yokouchi, Yokohama, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1989, Ser. No. 400,723
Int. Cl.[5] C04B *35/04*
U.S. Cl. 252—62.54 **12 Claims**

1. An aqueous magnetic fluid composition comprising:

a dispersion medium consisting essentially of water;

a dispersed system consisting essentially of fine ferromagnetic particles with a silane coupling agent chemically bonded to the surface of said fine ferromagnetic particles, said silane coupling agent having:

a hydrophilic group selected from the group consisting of a salt of carboxylic acid, a quaternary ammonium salt, an isothiouronium salt, and mixtures thereof; and

at least one hydrolyzable group;

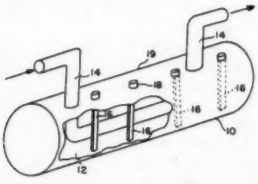
wherein said chemical bonding is accomplished by way of metasiloxane bonding, said metasiloxane bonding derived from dehydration condensation between said hydrolyzable group and said fine ferromagnetic particles.

5,082,582

NUCLEATING DEVICE FOR THERMAL ENERGY STORAGE COMPOSITIONS

Douglas A. Ames, Manhattan Beach, and Ingval Hageland, Costa Mesa, both of Calif., assignors to Electric Power Research Institute, Palo Alto, Calif.

Continuation-in-part of Ser. No. 313,049, Feb. 21, 1989, Pat. No. 4,971,713. This application Nov. 1, 1990, Ser. No. 607,698
Int. Cl.[5] C09K *5/00*
U.S. Cl. 252—70 **15 Claims**



1. In combination, a sodium hydroxide/water solution having a freezing point plateau such that it is adapted for thermal energy storage, and a nucleating device positioned in said solution, said nucleating device comprising an element creating a magnetic field and a magnetic material located in said field and magnetized thereby, said magnetic material being capable of nucleating said solution to inhibit supercooling thereof and being maintained in contact with said solution by said magnetic field.

5,082,583

Patent Not Issued For This Number

5,082,584

MICROEMULSION ALL PURPOSE LIQUID CLEANING COMPOSITION

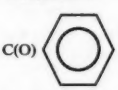
Myriam Loth, Saint Nicolas; Claude Blanvalet, Angleur, and Baudouin Valange, Gembloux, all of Belgium, assignors to Colgate-Palmolive Company, Piscataway, N.J.

Continuation-in-part of Ser. No. 866,029, May 21, 1986. This application Aug. 14, 1987, Ser. No. 85,902
The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.
Int. Cl.[5] C11D *9/00, 17/00*
U.S. Cl. 252—122 **26 Claims**

1. In a stable microemulsion composition containing

a water-soluble non-soap anionic detergent comprising an organic hydrophobic group of 8 to 26 carbon atoms and at least one water-solubilizing group selected from the group consisting of sulfonate, sulfate and carboxylate,

a cosurfactant selected from the group consisting of water-soluble C_3–C_4 alkanols; polypropylene glycol; C_1–C_4 mono-alkyl ethers and esters of ethylene glycol or propylene glycol; aliphatic mono- and di-carboxylic acids containing 3 to 6 carbons in the molecule; C_9–C_{15} alkyl ether polyethenoxy carboxylic acids of the structural formula $R(OC_2H_4)_nOX\ COOH$ wherein R is C_9–C_{15} alkyl, n is a number from 4 to 12 and X is selected from the group consisting of CH_2, $C(O)R_1$ and



wherein R_1 is a C_1–C_3 alkylene group, with the proviso that the anionic carboxylate form of the C_9–C_{15} alkyl ether polyethenoxy carboxylic acid is not present; monoethyl phosphate, diethyl phosphate and triethyl phosphate;

a C_8–C_{22} fatty acid or a soap of said fatty acid;

a hydrocarbon; and

water;

the improvement which comprises the use of water-insoluble perfume as the essential hydrocarbon ingredient in a proportion sufficient to form a dilute oil-in-water (o/w) microemulsion composition consisting essentially of, by weight, 1% to 10% of said anionic detergent, 2% to 10% of said cosurfactant, 0% to 2.0% of said fatty acid or said soap of said fatty acid, 0.4% to 10% of said perfume and the balance water.

5,082,585

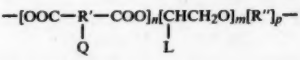
ENZYMATIC LIQUID DETERGENT COMPOSITIONS CONTAINING NONIONIC COPOLYMERIC STABILIZING AGENTS FOR INCLUDED LIPOLYTIC ENZYMES

John F. Hessel, Metuchen; Martin S. Cardinali, Millington, both of N.J., and Michael P. Aronson, West Nyack, N.Y., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 305,878, Feb. 2, 1989, Pat. No. 4,908,150. This application Jan. 31, 1990, Ser. No. 472,685
The portion of the term of this patent subsequent to Mar. 13, 2007, has been disclaimed.
Int. Cl.[5] C11D *3/37, 3/386*
U.S. Cl. 252—174.12 **7 Claims**

1. An enzymatic liquid detergent composition comprising, in an aqueous liquid medium, from 0.005–100LU per milligramme of the final composition of a lipolytic enzyme selected from *Humicola Lanuginosa* and *Thermomyces lanuginosus* and bacterial lipases which show a positive immunological cross-reaction with the antibody of the lipase, produced by Chrombacter viscosum var. lipolyticum NRRL B-3673, about 5% to about 70% by weight of a detergent-active compound, and

about 0.1% to about 10% by weight of an ethylene glycol containing polymer with an average molecular weight of 3,000 to 1,000,000 having the following structure:



where R' is a saturated, unsaturated, or aromatic hydrocarbon of 2–18 carbon atoms, R'' is selected from the group consisting of propylene glycol, butylene glycol, fatty amine ethoxylate, polyethylene glycol ether of glycerol esters and fatty ethanolamides, Q and L are independently selected from the group consisting of:

i) hydrogen, alkyl, alkylaryl, alkoxy, alkylamine groups containing 1 to 20 carbon atoms, and

ii) vinyl monomers selected from the group consisting of vinyl esters, acrylamides, styrenes and mixtures thereof

where m has a value of at least one and n and p are any integer including zero, except n and p cannot be O when L is hydrogen, said polymer being soluble or dispersible in said liquid detergent composition.

5,082,586

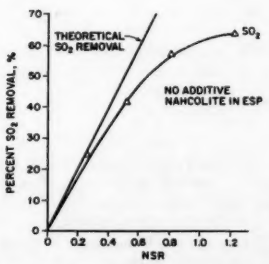
SO_xNO_x POLLUTION CONTROL COMPOSITION

Richard G. Hooper, Littleton, Colo., assignor to NaTec Resources, Inc., Houston, Tex.

Division of Ser. No. 170,719, Mar. 21, 1988, Pat. No. 4,844,915. This application Nov. 7, 1988, Ser. No. 268,165

Int. Cl.[5] B01D *53/00*

U.S. Cl. 252—184 **15 Claims**



1. An SO_x/NO_x pollution control reagent composition consisting essentially of from 0.1 to 25% urea in admixture with a sodium-based sorbent.

5,082,587

ACHIRAL FLUORINE-CONTAINING LIQUID CRYSTALS

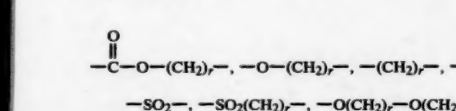
Eugene P. Janulis, 3M Center, P.O. Box 34427, St. Paul, Minn. 55133-3427

Filed Sep. 23, 1988, Ser. No. 248,948

Int. Cl.[5] C09K *19/52, 19/34;* **C07C** *19/08, 69/76*

U.S. Cl. 252—299.01 **18 Claims**

1. A chiral fluorine-containing liquid crystal compounds comprising a fluorocarbon terminal portion represented by the formula $-DC_qF_{2q}X$ where X is hydrogen or fluorine, q is 1–20, and D is



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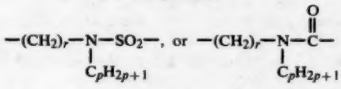


where r and r' are independently 1 to 20 and p is 0 to 4, and a hydrocarbon or another fluorocarbon terminal portion, the terminal portions being connected by a central core, the compounds having smectic mesophases or having latent smectic mesophases.

5,082,588

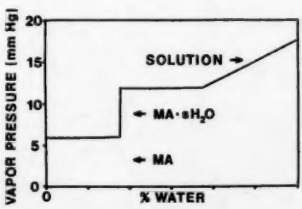
OPTICAL AND CAPACITANCE TYPE, PHASE TRANSITION, HUMIDITY-RESPONSIVE DEVICES

Stanley B. Elliott, 7125 Conelly Blvd., Walton Hills, Ohio 44146

Division of Ser. No. 444,559, Dec. 1, 1989, Pat. No. 4,975,249, which is a continuation of Ser. No. 78,186, Jul. 27, 1987, abandoned. This application Aug. 2, 1990, Ser. No. 562,017

Int. Cl.[5] C09K *19/32, 19/52*

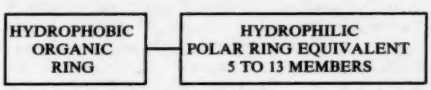
U.S. Cl. 252—299.62 **35 Claims**



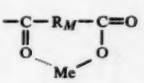
1. A lyotropic liquid crystal precursor salt complex that is an alkali metal salt of an aryl substituted keto organic acid, the salt having an ionic polar ring complex phase having

(A) an organic aryl ring structure, and

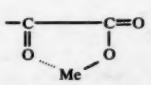
(B) a ring formed from the keto group of the organic acid portion, intervening ring-members, and the alkali metal ion, the ring having at least 5 members in which the alkali metal ion is a ring member that bonds to the keto group to form the ring complex, the complex having the general structure:



in which the 5 to 13 member ring is formed from the alkali metal (Me) ring member that bonds to the keto group according to the following structure:



where R_M is one or more ring members when the complex ring is a 6 to 13 member ring; and the following structure represents the 5 member ring:



5,082,589

LIQUID CRYSTALLINE ESTERS

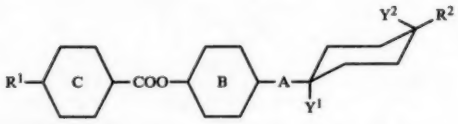
Richard Buchecker, Zurich, Switzerland; Hans-Jurgen Fromm, Lorrach, Fed. Rep. of Germany; Stephen Kelly, Kaiseraugst, and Martin Schadt, Seltisberg, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 283,655, Dec. 13, 1988, Pat. No. 4,925,278, which is a division of Ser. No. 52,659, May 20, 1987, Pat. No. 4,830,470. This application Feb. 27, 1990, Ser. No. 485,710

Int. Cl.[5] C09K *19/30, 19/52;* C07C *69/76*

U.S. Cl. 252—299.63 5 Claims

1. A compound of the formula



wherein A is —CH_2CH_2; rings B and C each are 1,4-phenylene which is unsubstituted or substituted with cyano or halogen; Y^1 and Y^2 are hydrogen; R^1 is straight-chain C_{4-18}-alkoxy; and R^2 is straight-chain C_{3-18}-alkyl.

5,082,590

POLYDIMETHYLSILOXANE/MQ RESIN ANTIFOAMING COMPOSITIONS

Claude Araud, Ecully, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

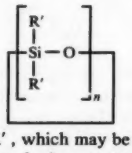
Filed Dec. 7, 1988, Ser. No. 280,881

Claims priority, application France, Dec. 8, 1987, 87 17368

Int. Cl.[5] B01D *19/00, 19/04;* B01J *13/00*

U.S. Cl. 252—321 13 Claims

1. A fluid organopolysiloxane antifoaming composition, free of inorganic filler material, comprising (A) at least one substantially linear polydimethylsiloxane polymer, (B) a methylpolysiloxane resin comprising recurring structural units of the formulae $R(CH_3)_2SiO_{0.5}$ and SiO_2, wherein R is an alkyl radical containing from 1 to 3 carbon atoms, or a vinyl radical, with the ratio of the number of $R(CH_3)_2SiO_{0.5}$ recurring units (M units) to the number of recurring $SiO_{0.5}$ units (Q units) ranging from 0.4 to 1.2, and (C) a cyclic polydiorganosiloxane of the formulae:



wherein the symbols R', which may be identical or different, are each a radical R or a hydrogen atom, and n is an integer ranging from 3 to 15, said cyclic polydiorganosiloxane (C) being present in an amount effective to act as a diluent for said substantially linear polydimethylsiloxane polymer (A) and said methylpolysiloxane resin (B).

5,082,591

SURFACE ACTIVE AGENT BASED ON POLYOXYALKYLENATED (1-PHENYL ETHYL) PHENOLS, THE PROCESS FOR PREPARATION THEREOF AND THE USE THEREOF FOR PRODUCING EMULSIFIABLE CONCENTRATED SOLUTIONS OF ACTIVE MATERIALS

Antonio Marchetto, Saronno; Anghelito Mascheroni, Milan, both of Italy, and Georges Ruffo, Vernaison, France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

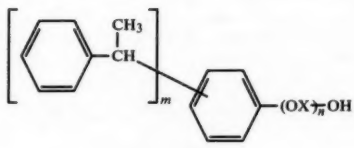
Filed May 30, 1989, Ser. No. 357,941

Claims priority, application Italy, May 27, 1988, 20777 A/88

Int. Cl.[5] B01F *17/42;* B01J *13/00;* C07C *43/20*

U.S. Cl. 252—351 12 Claims

1. A surface active agent comprising at least one polyoxyethylenated and -oxypropylenated poly (1-phenyl ethyl) phenol of formula (I)



(I)

wherein:

m is 2 or 3;

$(OX)_n$ represents a statistical succession of recurrent oxyethylenated units and recurrent oxypropylenated units which are not distributed in accordance with a block sequence;

n being such that the total number of recurrent oxyalkylenated units of the radical (OX)n ranges from approximately 16 to 35, and wherein the ratio of recurrent oxyethylenated units and oxypropylenated units ranges from approximately 75/25 to 90/10.

10. An emulsifiable concentrated solution of a phytosanitary active material comprising an emulsifiable active material and the surface active agent of claim 1.

5,082,592

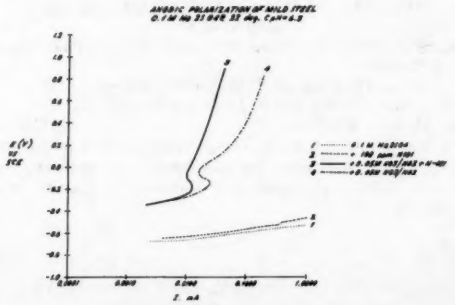
CORROSION INHIBITORS FOR FERROUS METALS IN AQUEOUS SOLUTIONS COMPRISING A NONIONIC SURFACTANT AND AN ANIONIC OXYGEN CONTAINING GROUP

Alexander C. McDonald, The Woodlands, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 346,095, May 2, 1989, abandoned. This application Jul. 2, 1990, Ser. No. 547,556

Int. Cl.[5] C23F *11/10*

U.S. Cl. 252—389.4 4 Claims



1. A method of inhibiting the corrosion of ferrous metals in an open circulating cooling or boiler water aqueous system

comprising adding to the aqueous system a composition comprising;

(i) a phenol/polyethylene nonionic surfactant; and

(ii) one or more alkali metal salts of borate, molybdate, and nitrate/nitrite.

5,082,593

NON-REDUCTION AGENT FOR DIELECTRIC CERAMICS

Hiroshi Takagi; Yoshiaki Mori, and Yukio Sakabe, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Aug. 18, 1989, Ser. No. 395,603

Claims priority, application Japan, Aug. 19, 1988, 63-207174

Int. Cl.[5] H01G *4/12*

U.S. Cl. 252—397 4 Claims

1. A non-reduction agent for dielectric ceramics which is composed of a $(MnO+RO)$ and $(1-a)$ $(BO_{3/2}+SiO_2)$ wherein R is selected from the group consisting of Mg, Ca, Sr and Ba, wherein a is in a range of

$$0.01 \leqq a \leqq 0.90 \text{ (Mol ratio)}$$

and wherein RO is in a range of 0–0.1 mol, MnO is in a range of 0–0.5 mol, SiO_2 is in a range of 0.05–0.49 mol, and $BO_{3/2}$ is in a range of 0.05–0.5 mol, and $(MnO+RO) \neq 0$.

3. A non-reduction agent for dielectric ceramics which is composed of $b(LiO_{\frac{1}{2}}+RO)$ and $(1-b)$ $(BO_{3/2}+SiO_2)$ wherein R is selected from the group consisting of Mg, Ca, Sr and Ba, wherein b is in a range of

$$0.01 \leqq b \leqq 0.80 \text{ (Mol ratio)}$$

and wherein RO is in a range of 0–0.1 mol, $LiO_{\frac{1}{2}}$ is in a range of 0–0.4 mol, SiO_2 is in a range of 0–0.75 mol, and $BO_{3/2}$ is in a range of 0–0.75 mol, and $(LiO_{\frac{1}{2}}+RO) \neq 0$.

5,082,594

MATERIAL FOR POLARIZABLE ELECTRODE

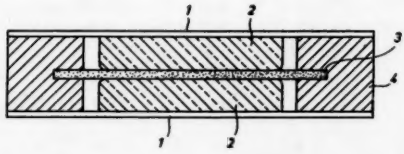
Yasushi Tsuzuki, Shiga; Toshio Tanaka, and Yasuhiro Iizuka, both of Ootsu, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 245,293, Sep. 16, 1988, abandoned. This application Feb. 11, 1991, Ser. No. 653,157

Claims priority, application Japan, Sep. 25, 1987, 62-240213

Int. Cl.[5] H01B *1/04*

U.S. Cl. 252—502 1 Claim



1. A polarizable electrode comprising a porous carbon material of activated carbon, activated carbon fibers, carbon fibers or powdery carbon as a raw material, wherein the total amount of acid groups of said porous carbon material is 0.45 to 4.0 $\mu eq/m^2$ based on the BET surface area of said carbon material, the acid groups being at least one of a hydroxyl group and a carboxyl group.

5,082,595

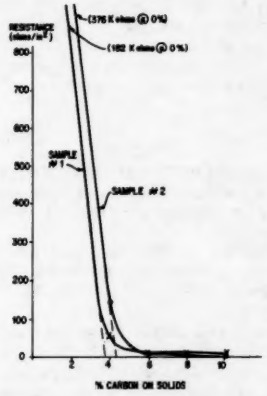
METHOD OF MAKING AN ELECTRICALLY CONDUCTIVE PRESSURE SENSITIVE ADHESIVE

Richard T. Glackin, Spring Grove, Pa., assignor to Adhesives Research, Inc., Glen Rock, Pa.

Filed Jan. 31, 1990, Ser. No. 472,950

Int. Cl.[5] H01B *1/24*

U.S. Cl. 252—511 8 Claims



1. A method for the production of an electrically conductive pressure snesitive adhesive composition comprised of a pressure sensitive adhesive and a conductive carbon black dispersed in said adhesive, said method comprising the steps of:

forming a slurry of said conductive carbon black in an organic solvent compatible with said adhesive in the absence of high shear while preserving the ability of the carbon black to orient into chains of particles while achieving uniform wetting of said conductive carbon black by said solvent resulting in the formation of a homogeneous slurry of said conductive carbon black and said organic solvent,

combining (1) said organic solvent-carbon black slurry with (2) a dispersion of said pressure sensitive adhesive in an organic solvent for said adhesive to form a homogeneous admixture of components (1) and (2) comprised of said conductive carbon black, each said organic solvent and said adhesive, and

separating each said organic solvent from said admixture to yield a conductive pressure sensitive adhesive,

said carbon black being present in said admixture in an amount such that said carbon black is present in said resulting pressure sensitive adhesive in an amount greater than 0 and less than 20 percent by weight based on the dry weight of the adhesive.

5,082,596

ELECTROCONDUCTIVE SILICONE RUBBER COMPOSITION AND CURED SILICONE RUBBER ARTICLE THEREOF

Takeshi Fukuda, and Kunihiko Mita, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1989, Ser. No. 416,379

Claims priority, application Japan, Oct. 11, 1988, 63-255561

Int. Cl.[5] H01B *1/06*

U.S. Cl. 252—511 4 Claims

1. An electroconductive silicone rubber composition which comprises, in admixture:

(a) a diorganopolysiloxane represented by the average unit formula

$$R_nSiO_{(4-n)/2},$$

in which R is a substituted or unsubstituted monovalent

hydrocarbon group selected from the group consisting of alkyl, cycloalkyl, alkenyl and aryl wherein each of said groups contains up to 7 carbon atoms and the subscript n is a positive number in the range of from 1.95 to 2.05;

(b) cured silicone rubber in the form of a powder of which the particles have a spherical configuration with a sphericity of 0.8 to 1 and an average particle diameter in the range from 0.1 to 100 μm;

(c) carbon black in an amount ranging from 5 to 100 parts by weight per 100 parts by weight of the total amount of components (a) and (b); and

(d) a curing agent,

the proportion of the component (a) to component (b) being in the range from 95:5 to 50:50 by weight.

5,082,597

SINTERED SILICON CARBIDE COMPOSITE

Hiroshi Tashiro; Yoshio Nakamura, and Masatoshi Ohnishi, all of Hadano, Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo, Japan

Filed Sep. 25, 1989, Ser. No. 411,666

Claims priority, application Japan, Sep. 26, 1988, 63-240325

Int. Cl.[5] C04B *35/56, 35/58, 35/12*

U.S. Cl. 252—516 **7 Claims**

1. A sintered silicon carbide composite having a relative density of not less than 93%, a specific electrical resistivity of not greater than 10 ohm-cm and a bending strength of not less than 400 MPa, and prepared by sintering a blend consisting essentially of from 25 to 85% by weight of silicon carbide, from 1 to 25% by weight of at least one of chromium and chromium compound, from 10 to 70% by weight of at least one of carbide, nitride and boride f elements belonging to the groups IVb and Vb of the periodical table, and from 3 to 25% by weight of aluminum oxide, in an inert gas atmosphere at a temperature from 1700° to 2100° in an atmospheric pressure or a reduced pressure.

5,082,598

RESIN COMPOSITION OF HIGH STORAGE STABILITY

Toshio Awaji, Kawanishi; Kenichi Ueda, and Daisuke Atobe, both of Suita, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Division of Ser. No. 100,210, Sep. 23, 1987, Pat. No. 4,837,280. This application May 8, 1989, Ser. No. 335,772

Claims priority, application Japan, Sep. 26, 1986, 61-226198; Sep. 26, 1986, 61-226199

The portion of the term of this patent subsequent to Jun. 6, 2006, has been disclaimed.

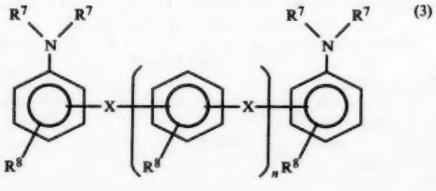
Int. Cl.[5] C08G *12/44, 59/17;* **C08K** *5/16, 5.09*

U.S. Cl. 525—518 **4 Claims**

1. A thermosetting resin composition of high storage stability, comprising:

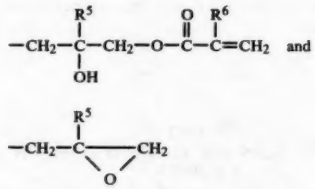
(I) 100 parts by weight of a thermosetting resin composition comprising:

(A') (b') 30 to 95% by weight of an unsaturated ester compound represented by the formula (3):



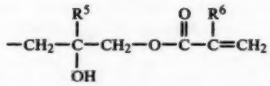
(3)

wherein R^7's independently selected from the group consisting of

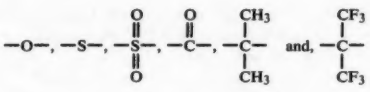


and

wherein R^5 and R^6 independently stand for hydrogen atom or methyl group, and hydrogen atom, at least one of R^7's stands for

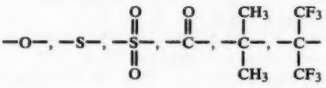


wherein R^5 and R^6 have the same meanings as defined above, R^8's stand for at least one member selected from the group consisting of hydrogen atom, halogen atoms, methoxy group, and alkyl groups of 1 to 5 carbon atoms, and n stands for O or an integer in he range of 1 to 10, providing that X stands for a divalent organic group selected from the group consisting of



and,

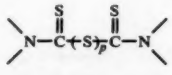
wherein n is O, or X's stand for divalent organic groups independently selected from the group consisting of



and —CH_2—0 where n is an integer in the range of 1 to 10, and

(C') 70 to 5% by weight of polymerizable cross-linking agent,

(II) 0.0001 to 2.0 parts by weight of a thiuram compound possessing at least one atomic group represented by the general formula (4):



(4)

wherein p stands for an integer in the range of 1 to 8, in the molecular unit thereof, and

(III) 0.00001 to 0.1 part by weight (as copper metal) of a copper-containing compound.

5,082,599

2-METHYL- AND 2-HYDROXYMETHYL-SERINE-N,N-DIACETIC ACID AND DERIVATIVES THEREOF

Alfred Oftring, Bad Duerkheim; Stefan Birnbach, Ludwigshafen; Richard Baur, Mutterstadt; Charalampos Gousetis, and Wolfgang Trieselt, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

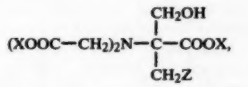
Filed Mar. 16, 1990, Ser. No. 494,308

Claims priority, application Fed. Rep. of Germany, May 6, 1989, 3914980

Int. Cl.[5] **C02F** *5/02, 5/08;* **C11D** *3/26*

U.S. Cl. 252—546 **5 Claims**

1. 2-Methyl- and 2-hydroxymethyl-serine-N,N-diacetic acid and derivatives thereof of the general formula I



(I)

in which X denotes hydrogen, alkali metal or ammonium which may or may not be substituted by C_1–C_4-alkyl or C_1–C_4-hydroxyalkyl groups and Z denotes hydrogen or hydroxyl.

5,082,600

TRANSPARENT SOAP BAR PROCESS USING TRIALKYLAMINE OXIDE DIHYDRATE

Kim R. Smith, and James E. Borland, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

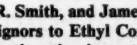
Continuation-in-part of Ser. No. 344,275, Apr. 26, 1989, abandoned. This application Oct. 2, 1989, Ser. No. 416,113

The portion of the term of this patent subsequent to Oct. 8, 2008, has been disclaimed.

Int. Cl.[5] **C11D** *1/75, 17/00*

U.S. Cl. 252—547 **11 Claims**

1. A method of making a transparent soap bar, said method comprising mixing (i) a non-hygroscopic trialkylamine oxide dihydrate having the structure:



wherein R′ is a primary alkyl containing 8-24 carbon atoms, R″ is methyl, ethyl or a primary alkyl containing 8–24 carbon atoms and R‴ is methyl or ethyl, and (ii) a fatty acid soap and optionally other conventional transparent soap bar ingredients, the amount of said trialkylamine oxide dihydrate being sufficient to comprise 1–25 weight percent of the resultant transparent soap bar.

5,082,601

LIGHT-POLARIZING FILMS

Toyokazu Okada; Koji Higashi, and Satoshi Taguchi, all of Osaka, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

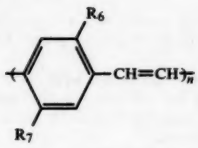
Continuation of Ser. No. 253,925, Oct. 7, 1988, abandoned, which is a continuation of Ser. No. 53,656, May 26, 1987, Pat. No. 4,802,745. This application Jun. 29, 1990, Ser. No. 544,793

Claims priority, application Japan, May 23, 1986, 61-119852; Mar. 18, 1987, 62-65161

Int. Cl.[5] **F21V** *9/14;* **G02B** *5/30;* **C08G** *75/00*

U.S. Cl. 252—585 **6 Claims**

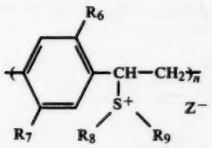
1. A light-polarizing film comprising a uniaxially oriented conductive polymer having about 81% or more of a polarizing coefficient in the wavelength having a minimum transmittance in the range of from 400 to 700 nm, said uniaxially oriented conductive polymer represented by formula (VIII):



(VIII)

wherein R_6 and R_7, which may be the same or different, each represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, a nitrile group, an alkoxy group having from 1 to 4 carbon atoms, a halogen atom, or a trihalomethyl group; and

n represents an integer of at least 5, and wherein the conductive polymer represented by formula (VIII) is obtained from a conductive polymer precursor represented by formula (IV):



(IV)

wherein R_6 and R_7, which may be the same or different, each represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, a nitrile group, an alkoxy group having from 1 to 4 carbon atoms, a halogen atom, or a trihalomethyl group;

R_8 and R_9, which may be the same or different, each represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms;

Z represents an anion; and

n represents an integer of at least 5, wherein the conductive polymer is in the form of a uniaxially oriented conductive polymer obtained by mixing the conductive polymer precursor with a base polymer and subjecting to uniaxially stretching and a releasing treatment.

5,082,602

PROCESS AND APPARATUS FOR REGENERATING SPENT REPROCESSING EXTRACTION SOLVENT

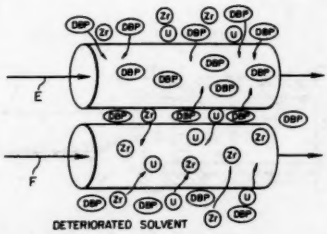
Naohito Uetake; Ietsugu Sekine; Haruo Hasimoto; Tetsuo Fukasawa, all of Hitachi, and Hajime Iba, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 20, 1986, Ser. No. 898,214

Claims priority, application Japan, Aug. 23, 1985, 60-184262

Int. Cl.[5] **G21C** *19/42;* **G21F** *9/08;* **C01G** *56/00, 57/00*

U.S. Cl. 252—627 **17 Claims**



1. A process for regenerating a spent organic solvent containing anions and cations by separating and removing the anions and cations from the organic solvent, the process comprising:

forming one or more alkaline aqueous solution phases for

capturing anions via a first hydrophobic porous membrane and forming one or more acidic aqueous solution phases for capturing cations via a second hydrophobic porous membrane in the organic solvent containing cations and anions;

capturing the cations by the acidic aqueous solution phases and the anions by the alkaline aqueous solution phases simultaneously through the first and second hydrophobic porous membranes; and

collecting the acidic aqueous solution phases for removing the cations and collecting the alkaline aqueous solution phases for removing the anions.

5,082,603

METHOD OF TREATMENT OF HIGH-LEVEL RADIOACTIVE WASTE

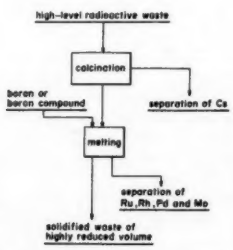
Misato Horie, Mito; Masahiro Fukumoto, and Masayuki Yoneya, both of Ibaraki, all of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Mar. 14, 1991, Ser. No. 668,481

Claims priority, application Japan, Mar. 15, 1990, 2-65403

Int. Cl.[5] G21F *9/00*

U.S. Cl. 252—628 **6 Claims**



1. A method of treatment of a high-level radioactive waste containing platinum group elements comprising adding boron or a boron compound to a calcined material of the high-level radioactive waste in an amount of 0.5 to 10% by weight in terms of boron as a simple substance, heating the resultant mixture at a temperature of about 1000° C. or above under a reduction condition to melt the mixture and to alloy the platinum group elements present in the calcined material with boron, recovering a layer of the resultant platinum group element alloys from a layer of residual oxides through sedimentation, and solidifying the layer of the residual oxides to form a volume-reduced high-level radioactive solidified waste.

5,082,604

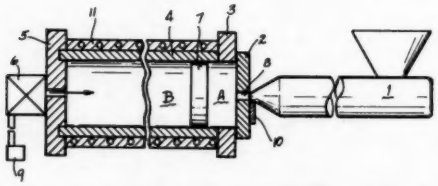
EXTRUSION OF PLASTICS

Emery I. Valyi, 19 Moseman Ave., Katonah, N.Y. 10536

Filed Nov. 19, 1990, Ser. No. 615,251

Int. Cl.[5] B29C *45/00, 45/40, 45/56, 45/57*

U.S. Cl. 264—40.5 **12 Claims**



1. An apparatus for the extrusion of rod-like thermoplastics, which comprises:

a hollow sold having a pre-defined shape and defining a hollow space therein, said space formed by mold walls and opposing ends;

a reciprocable piston fittingly located entirely within said space and separating said space into a first and second chamber;

said first chamber forming a mold cavity defined by said mold walls, a side of said piston and an end of said mold;

said second chamber defined by said mold walls, the opposite end of said mold and the other side of said piston;

means for injecting a molten thermoplastic into said first chamber; and

means for maintaining predetermined pressure in said first chamber until said molten thermoplastic has solidified by moving said piston in said space.

8. A method for the extrusion of rod-like thermoplastics which comprises:

providing a hollow mold having a pre-defined shape and defining a hollow space therein, said space formed by mold walls and opposing ends;

locating a reciprocable piston entirely within said space to separate said space into a first and second chamber, with said first chamber defining a mold cavity;

moving said piston in said space responsive to pressure changes in said first and second chambers to define variable sized first and second chambers between said piston and said opposing ends;

injecting a molten thermoplastic in said first chamber;

maintaining a predetermined pressure in said first chamber by moving said piston in said space until said molten thermoplastic has cooled to form a solidified thermoplastic; and

ejecting said solidified thermoplastic from said first chamber.

5,082,605

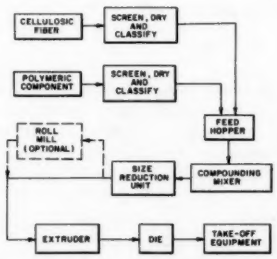
METHOD FOR MAKING COMPOSITE MATERIAL

Joe G. Brooks, Springdale; Billy D. Goforth, Fayetteville, and Charles L. Goforth, Lowell, all of Ark., assignors to Advanced Environmental Recycling Technologies, Inc., Springdale, Ark.

Continuation-in-part of Ser. No. 491,061, Mar. 14, 1990. This application May 30, 1990, Ser. No. 530,840

Int. Cl.[5] B29C *47/02, 47/92*

U.S. Cl. 264—40.6 **20 Claims**



1. A method for making an extruded dimensionally stable and water resistant composite material comprising a discontinuous phase of substantially aligned cellulosic fibers encapsulated in a polymeric continuous phase, said method comprising the steps of:

a. Combining from about 40 to about 60 weight percent cellulosic fiber with from about 60 to about 40 weight percent of a polymeric component comprising a major portion of polyethylene;

b. Mixing the cellulosic fiber and polymeric component while simultaneously heating a mixture thereby formed to increase the temperature of the mixture to an encapsulation point and monitoring the temperature of the mixture to determine when the temperature reaches the encapsulation point to form a mixture comprising a discontinuous phase of cellulosic fibers encapsulated in a polymeric continuous phase;

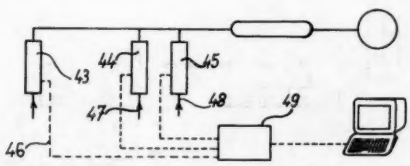
c. Reducing the mixture to smaller particles and feeding such particles to an extruder while maintaining the temperature of the mixture and the particles produced therefrom within an encapsulation range of plus or minus about 20 degrees F. from the encapsulation point;
d. Extruding the particles into a homogeneous mass while controlling the temperature of the homogeneous mass within the encapsulation range;
e. Forcing the homogeneous mass through an alignment plate to substantially align the fibers in a flow direction within the polymeric continuous phase; and
f. Directing the homogeneous mass with fibers substantially aligned in the flow direction through a die to form a composite extrudate having a desired shape.

5,082,606

PROCESS FOR PRODUCING CERAMIC-METAL MULTILAYER COMPONENTS AND APPARATUS FOR CARRYING OUT THE PROCESS

Frédéric Rotman, Tokyo, Japan; Yannick Rancon, Velizy, France; Philippe Queille, Viroflay, France, and Michel Olivier, Beynes, France, assignors to L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed Feb. 22, 1990, Ser. No. 483,182
Claims priority, application France, Feb. 22, 1989, 89 02278
Int. Cl.[5] C04B *33/32*
U.S. Cl. 264—40.6 **7 Claims**



1. A method of forming multilayered metal-ceramic structures comprising the steps of:
shaping a stack of raw ceramic and metal sheets;
preparing a first controlled atmosphere substantially free of oxygen and comprising nitrogen and hydrogen and between 1% and 8% of water vapor by adding a selected amount of oxygen to substantially dry nitrogen and hydrogen in excess to obtain an intermediary mixture containing hydrogen in excess, and catalytically oxidizing a portion of said hydrogen in said intermediary mixture to obtain said first atmosphere;
co-firing the stack at a temperature greater than 800° C. under said first atmosphere;
forming a second controlled atmosphere different from said first atmosphere, substantially free of oxygen and comprising nitrogen and hydrogen and between 1% and 8% water vapor, by adding a selected amount of oxygen to substantially dry nitrogen and hydrogen to obtain a second intermediary mixture having hydrogen in excess, and catalytically oxidizing a portion of said hydrogen in said second intermediary mixture to obtain said second atmosphere; and
cooling the co-fired stack under said second atmosphere.

5,082,607

PROCESS OF PRODUCING POROUS CERAMICS

Yoshihiro Tange, and Hideaki Matsuda, both of Marugame, Japan, assignors to Okura Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 187,839, Apr. 29, 1988, abandoned.
This application Jul. 10, 1990, Ser. No. 550,480
Claims priority, application Japan, Apr. 30, 1987, 62-104829
Int. Cl.[5] C04B *35/64*
U.S. Cl. 264—44 **11 Claims**

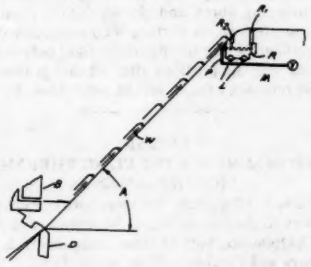
1. A process of producing a porous ceramic, which comprises forming an inverted emulsion having a sinterable ceramic powder in the oil phase thereof from a mixture of (a) an emulsifying agent (b) 10 to 50 parts by weight of a mixture of at least one polymerizable monofunctional unsaturated compound having one polymerizable unsaturated bond and at least one polymerizable polyfunctional unsaturated compound (c) 10 to 300 parts by weight of water and (d) 100 parts by weight of said sinterable ceramic powder, radical-polymerizing or redox-polymerizing said mixture of said polymerizable monofunctional unsaturated compound and said polymerizable polyfunctional unsaturated compound in said inverted emulsion to cure and crosslink said mixture of said unsaturated compounds in said inverted emulsion and thereby form a cured crosslinked product, drying said cured crosslinked product to remove water and thereby form a porous cured product having cell walls comprising said sinterable ceramic powder and an organic binder material formed by said polymerization of said unsaturated compounds, and then firing said porous cured product to combust said organic binder material in said cell walls and to sinter said sinterable ceramic powder in said cell walls to form said porous ceramic.

5,082,608

POLYSTYRENE FOAM SHEET MANUFACTURE

James A. Karabedian, Toledo, Ohio, and Maurice W. Blackwelder, Bardstown, Ky., assignors to Owens-Illinois Plastic Products Inc., Toledo, Ohio

Filed Jun. 14, 1990, Ser. No. 538,291
Int. Cl.[5] B29C *47/90*
U.S. Cl. 264—46.1 **17 Claims**



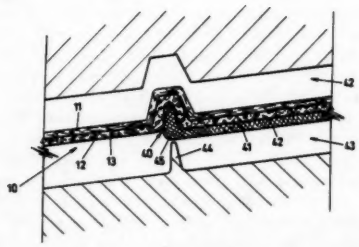
1. The method of making foam sheet material which comprises
introducing atmospheric gas as the blowing agent into a molten thermoplastic resin,
extruding the thermoplastic through an extruder in the form of a frustoconical tubular web at an angle of at least 45° to the axis of the extruder,
passing said frustoconical web over an internal cooling mandrel to cool the interior of the web,
simultaneously continuously applying cooling air axially to the outside of said frustoconical web at an acute tangentially to the web whereby the cooling air moves in a direction parallel to the frustoconical web from adjacent the extruder to adjacent the internal cooling mandrel such that the external surface of the frusto conical web is cooled by the cooling air and by the additional ambient air drawn by the cooling air against the external surface of the frustoconical web and such that the resultant foam has substantially no residual blowing agent and is substantially dimensionally stable at ambient temperatures and has substantially no corrugations.

5,082,609

METHOD OF FORMING A MOULDED PANEL

Milo L. Rohrlach, North Brighton, and William J. Hall, Eden Hills, both of Australia, assignors to Bridgestone Australia Ltd., Eadwardstown, Australia

Filed Oct. 22, 1990, Ser. No. 602,421
Int. Cl.[5] B29C *67/22, 41/08*
U.S. Cl. 264—46.4 7 Claims



1. A method of production of a moulded panel having a finish face, a substrate, and a lamina of moulded polyurethane between the face and substrate, comprising the following steps sequentially:

(a) spraying release agent to finish forming and substrate forming surfaces of respective portions of an open two portion die set, applying a finish material over said release agent on the finish forming surface of one of said portions so as to establish an obverse side and a reverse side of the finish material,

(b) spraying ingredients of mouldable polyurethane over the reverse side of the finish material,

(c) applying a sheet of reinforcing fibres on the mouldable polyurethane after it has partially set but before it has completely cured,

(d) spraying liquid ingredients of a rigid polyurethane onto the reinforcing fibres, and closing the die portions so that said substrate forming surface is contiguous with the rigid polyurethane before setting of the rigid polyurethane, and

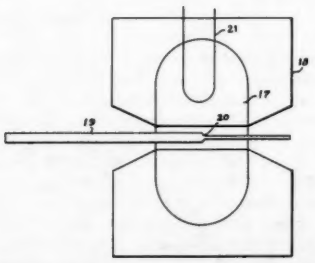
(e) opening said die portions after all said polyurethane has set, and removing the moulded panel from the die set.

5,082,610

PROCESS FOR SURFACE TREATING THERMOPLASTIC MONOFILAMENTS

Robert B. Fish, Jr.; Robert L. Rackley, both of Parkersburg, W. Va.; Robert K. Anderson, Signal Mountain, and Michael H. Mainz, Chattanooga, both of Tenn., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 106,653, Oct. 13, 1987, Pat. No. 4,921,668. This application Oct. 23, 1989, Ser. No. 425,403
The portion of the term of this patent subsequent to May 1, 2007, has been disclaimed.
Int. Cl.[5] D01F *6/60;* D01D *5/12, 10/02*
U.S. Cl. 264—80 15 Claims



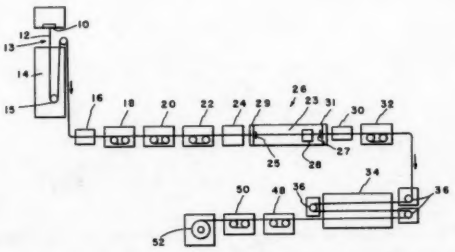
1. In the process for production of monofilaments by extruding a thermoplastic polymer through a die, quenching and orienting the extruded polymer to form a monofilament by stretching in at least two draw stages to a total draw ratio of at least about 4.5 times its original length, the improvement comprising drying the surface of the monofilament after quenching and heating the monofilament by passing it in a substantially moisture-free condition through a heating zone having a temperature at least about 800 Centigrade degrees above the melting point of the polymer from which the monofilament is made, for a time sufficient to deorient the surface of the monofilament, but not sufficient to melt the interior of the monofilament, and wherein the monofilament is heated before the last at least 1.3X increment of draw ratio.

5,082,611

PROCESS FOR SPINNING AND DRAWING MONOFILAMENTS WITH HIGH TENACITY AND HIGH TENSILE UNIFORMITY

Earl B. Adams, Hixson; Robert K. Anderson, Signal Mountain, and Rajive K. Diwan, Chattanooga, all of Tenn., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 220,043, Jul. 15, 1988, abandoned. This application Dec. 22, 1988, Ser. No. 288,523
Int. Cl.[5] D01D *5/12*
U.S. Cl. 264—129 44 Claims



1. In a process including the steps of spinning, water-quenching, and drawing a heavy denier, thermoplastic monofilament in at least first and second draw stages, the quenched monofilament being advanced in the first draw stage through a steamer containing a high temperature steam atmosphere and being advanced in the second draw stage through a zone heated with a radiant heater, the total draw ratio being at least about 5.5X, the monofilament after water quenching contacting guides and surfaces including feed rolls and thereafter entering the steamer, the improvement which comprises:

providing water on the surface of the monofilament before such contacting of said guides and surfaces in the amount of at least 10% by weight based on the dry weight of the monofilament.

5,082,612

METHOD OF MAKING AN OIL SEAL HAVING TWO LIPS FORMED BY SPLITTING THE BLANK

John D. Butler, Van Wert, Ohio, and Jon A. Chandler, Brighton, Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Division of Ser. No. 347,084, May 3, 1989, Pat. No. 5,013,052. This application Jan. 7, 1991, Ser. No. 638,721
Int. Cl.[5] B29C *43/18*
U.S. Cl. 264—138 7 Claims

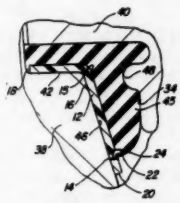
1. A method of forming an oil seal having a plurality of lined sealing lips comprising:

cutting a circumferentially extending groove in an annular wafer of seal lip lining material;

positioning said annular wafer in a seal forming mold; and,

molding a body portion of the seal by heating and compressing said wafer and a prep ring of elastomeric material

in said seal forming mold, the elastomeric material of said prep ring flowing over a surface of said wafer in which said circumferentially extending groove opens, the flowing elastomeric material of the prep ring exerting a force against the groove sufficient to split said wafer into two pieces at the groove and



to displace a first piece of said wafer within the seal forming mold to a position corresponding to a desired location of a first seal lip of the oil seal, at least a portion of the second piece of said wafer remaining at a desired position of another seal lip of the oil seal.

5,082,613

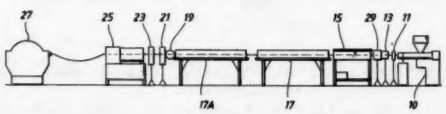
METHOD FOR IMPROVEMENT OF POLYBUTYLENE PIPE STRENGTH

Mark L. Kasakevich, Missouri City; Donald H. Krasner, Houston; Jerry W. Secrist, Katy, and Roland O. Meuhlner, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 23, 1990, Ser. No. 556,673

Int. Cl.[5] B29C *47/88*

U.S. Cl. 264—178 R **3 Claims**



1. A method of producing polybutylene theroplastic tubing having improved mechanical properties, said method comprising the steps of:

extruding molten polybutylene thermoplastic material in the form of a continuous tube; and

slowly cooling said molten material by moving said tube through a spray cooling tank for a particular bath residence time, while spraying said tube with water having a particular temperature; the ratio of said bath residence time in minutes divided by said water temperature in degrees Fahrenheit being in the range from about 0.004 to about 0.010.

5,082,614

METHOD FOR PRODUCING A COMPOSITE PIPE IN A ROTATING DRUM

Peter Hartmann, Feldmeflen, and Bernhard Bergmann, Balsthal, both of Switzerland, assignors to Peter Hartmann Beteiligungen AG, Zurich, Switzerland

Filed Dec. 22, 1989, Ser. No. 455,616

Claims priority, application Switzerland, Dec. 23, 1988, 4787/88

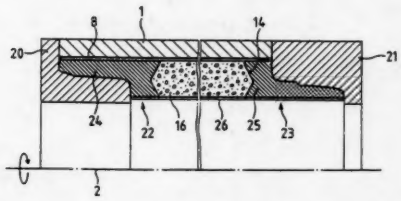
Int. Cl.[5] B28B *1/16, 1/20, 7/10, 7/20*

U.S. Cl. 264—256 **3 Claims**

1. A method for producing a composite pipe built up by layering core and reinforcing material layers in a rotating drum, said pipe including socket connecting elements on respective outer and inner walls at the ends of said pipe, said socket connecting elements including a plastic reinforcing layer having a fibre reinforcement material, and said pipe having an interposed core layer of inorganic material having a binder between said socket connecting elements, said method comprising the steps of:

forming said outer wall of reinforcing layer material initially introduced into said drum, the ends of said drum being bounded by rings each provided with a terminating surface;

fixing first and second shaping rings to said ends of said drum and introducing a core layer material on to said reinforcing layer material, such that said shaping rings limit said core layer to a length smaller than the drum length;



fixing third and fourth shaping rings to said drum ends, for shaping said socket connecting elements, and providing hollow annular spaces between the ends of said core layer and said third and fourth shaping rings and filling said annular spaces with the socket material, prior to an application of an inner wall reinforcing layer thereby forming one said pipe end with a socket end having a projection, and forming another said pipe end with a spigot end having an offset, and

wherein said material used to shape said socket and spigot pipe ends corresponds to said material of said reinforcing layer of said pipe.

5,082,615

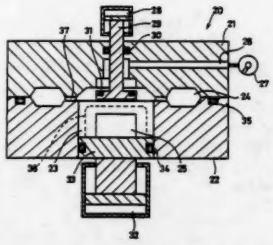
METHOD FOR PACKAGING SEMICONDUCTOR DEVICES IN A RESIN

Kunito Sakai, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 135,092, Dec. 18, 1987, abandoned. This application Sep. 8, 1989, Ser. No. 404,389

Int. Cl.[5] B29C *45/02, 45/14*

U.S. Cl. 264—510 **12 Claims**



1. A method for packaging semiconductor devices in resin by using a mold having a pot with inner sidewalls, and a plurality of cavities communicating with said pot through runners, comprising the steps of:

placing semiconductor devices in said cavities;

placing a resin tablet in said pot;

creating a vacuum in said pot and heating said resin tablet in said pot under said vacuum to expand said resin tablet to a volume about twice its original unheated volume sufficient to enable removal of substantially all gases evolved from the resin tablet without contacting the tablet to the

inner sidewalls of said pot, said vacuum drawing off substantially all air contained in said pot and substantially all gases emitted from said heated resin tablet;

then pressing said resin tablet in said pot, to thereby feed the heated resin from said pot to said cavities via said runners to enclose said semiconductor devices therein; and

allowing the heated resin enclosing said semiconductor devices to be cured.

5,082,616

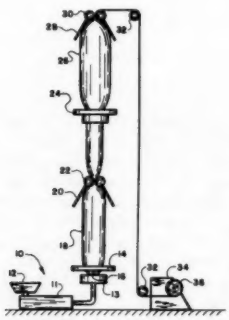
FILM BLOWING PROCESS

James L. White, Akron, Ohio, and Tao Nie, Richmond, Va., assignors to Edison Polymer Innovation Corp., Broadview Heights, Ohio

Filed Oct. 25, 1990, Ser. No. 603,814

Int. Cl.[5] B29C *55/28*

U.S. Cl. 264—567 **11 Claims**



1. A process for forming biaxially oriented film in a tubular film extrusion process from a blend of poly(vinylidene fluoride) and at least one other polymer miscible therewith comprising:

extruding said blend from an annular die to form a tubular extrudate;

cooling said extrudate and injecting a gas therein to form a first bubble while simultaneously drawing said bubble;

collapsing said first bubble;

heating said collapsed bubble and injecting a gas therein to form a second bubble while simultaneously drawing said second bubble, thereby forming biaxially oriented film.

5,082,617

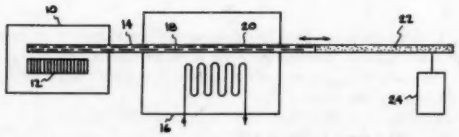
THULIUM-170 HEAT SOURCE

Carl E. Walter, Pleasanton; Richard Van Konynenburg, Livermore, and James H. VanSant, Tracy, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 6, 1990, Ser. No. 578,118

Int. Cl.[5] G21G *1/06*

U.S. Cl. 376—184 **11 Claims**



1. An isotopic heat source comprising:

at least one isotopic fuel stack, comprising alternating layers of:

thulium oxide; and

a low atomic weight diluent for thulium oxide;

a heat block defining holes into which the fuel stacks can be placed;

at least one heat pipe for heat removal, with said heat pipe being positioned in the heat block in thermal connection with the fuel stack; and

a structural container surrounding the heat block.

5,082,618

METHOD AND DEVICE FOR MODIFYING THE CONCENTRATION OF THE SOLUBLE POISON CONTAINED IN THE COOLING FLUID OF THE PRIMARY CIRCUIT OF A NUCLEAR REACTOR

Philippe Dagard, Marly le Roi, France, assignor to Framatome, Courbevoie, France

Continuation-in-part of Ser. No. 245,971, Sep. 19, 1988, abandoned, which is a continuation of Ser. No. 461,064, Jan. 26, 1983, abandoned. This application Jun. 13, 1989, Ser. No. 365,582

Claims priority, application France, Jan. 27, 1982, 82 01249

Int. Cl.[5] G21C *7/06*

U.S. Cl. 376—219 **3 Claims**

1. Method for modifying the concentration of boric acid in the form of soluble poison contained in cooling fluid of a primary circuit of a nuclear reactor, comprising the steps of

(a) removing said cooling fluid from said primary circuit (1);

(b) monitoring said concentration of boric acid in said cooling fluid;

(c) as a function of said concentration of said cooling fluid, selectively passing all of said cooling fluid into at least one electrodialysis module, and alternatively passing only a first part of said cooling fluid into electrodialysis modules and a second part towards at least one reverse osmosis apparatus;

(d) adding an additive promoting dissociation of said boric acid to said cooling fluid when said cooling fluid leaves said primary circuit; and

(e) returning said cooling fluid into said primary circuit.

5,082,619

PASSIVE HEAT REMOVAL FROM NUCLEAR REACTOR CONTAINMENT

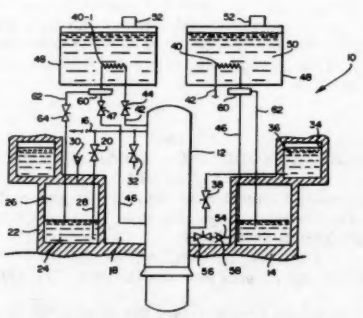
Craig D. Sawyer, Los Gatos, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Nov. 6, 1989, Ser. No. 432,246

The portion of the term of this patent subsequent to Oct. 22, 2008, has been disclaimed.

Int. Cl.[5] G21C *15/18*

U.S. Cl. 376—283 **8 Claims**



5. A nuclear system of a type including a containment having a nuclear reactor therein, comprising:

a heat exchanger;

a pool of water surrounding said heat exchanger;

means for venting said pool of water to the environment outside said containment;

an open entry conduit within said containment and commu-

nicating with said heat exchanger, heated fluid present in the containment flowing into said heat exchanger through said conduit and being cooled in said heat exchanger;

a suppression pool in said containment, said suppression pool including a supply of water therein;

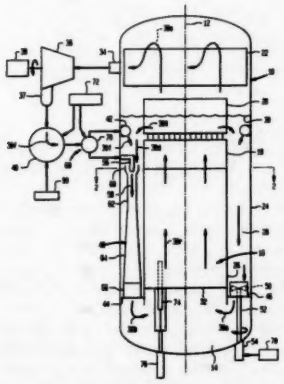
a non-blockable conduit connected at an end thereof with a heat exchanger outlet for returning cooled fluid from said heat exchanger to the suppression pool, an opposite cooled fluid return conduit end being disposed at a location submerged a distance below a normal water level in the suppression pool, said system further comprising a condensate/non-condensable gas collector means disposed in said cooled fluid return conduit, condensate passing from said collector means to said cooled fluid return conduit opposite end, the non-condensable gasses passing from said collector means to a vent pipe means connected at one end with said collector means, the pipe means having another end outletting in the suppression pool.

5,082,620

BWR PARALLEL FLOW RECIRCULATION SYSTEM

Larry E. Fennern, San Jose, Calif., assignor to General Electric Coompany, San Jose, Calif.

Filed May 13, 1991, Ser. No. 699,428
Int. Cl.[5] G21C *15/22*
U.S. Cl. 376—373 **12 Claims**



1. A recirculation system for a boiling water reactor having a cylindrical shroud surrounding a reactor core and spaced radially inwardly from a pressure vessel to define an annular downcomer for channeling downwardly a recirculation reactor coolant into an inlet of the core disposed at a lower plenum of the vessel comprising:

an annular pump deck disposed in said downcomer and fixedly joined to said pressure vessel and said core shroud;

a plurality of circumferentially spaced impeller-driven reactor internal pumps (RIPs) disposed in said downcomer and joined to said pump deck for pumping a first portion of said coolant in said downcomer downwardly through said pump deck and into said lower plenum as RIP discharge flow to said core inlet; and

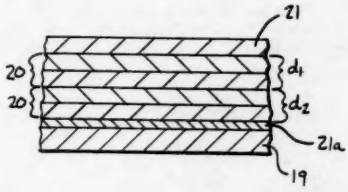
a plurality of circumferentially spaced fluid-driven jet pumps (JPs) disposed in said downcomer and joined to said pump deck for pumping a second portion of said coolant in said downcomer downwardly through said pump deck and into said lower plenum as JP discharge flow to said core inlet in parallel flow with said RIP discharge flow.

5,082,621

NEUTRON REFLECTING SUPERMIRROR STRUCTURE

James L. Wood, Drayton Plains, Mich., assignor to Ovonic Synthetic Materials Company, Inc., Troy, Mich.

Filed Jul. 31, 1990, Ser. No. 566,909
Int. Cl.[5] G21C *11/06*
U.S. Cl. 376—458 **12 Claims**



1. An improved neutron reflecting supermirror comprising a plurality of stacked sets of bilayers of high and low neutron scattering materials, said materials deposited upon a substrate, one layer of each of said sets of bilayers consisting of titanium and the second layer of each of said sets of bilayers consisting of an alloy including nickel and a microstructure enhancing element, carbon, interstitially present in the nickel alloy layer to modify the nickel crystal, wherein the microstructure enhancing element has a high neutron scattering potential.

5,082,622

ZINC ALLOY POWDER FOR ALKALINE BATTERIES

Marcel Meeus, Lommel, and Yvan Strauven, Neerpelt, both of Belgium, assignors to S.A. Acec-Union Miniere N.V., Marcinelle, Belgium

Filed Oct. 30, 1990, Ser. No. 605,423
Claims priority, application Belgium, Nov. 10, 1989, 0891197
Int. Cl.[5] C22C *18/00*
U.S. Cl. 420—514 **16 Claims**

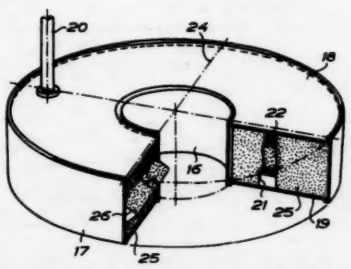
1. A zinc base powder for alkaline batteries consisting of 0.005–2% aluminum as well as besides zinc and unavoidable impurities, only 0.005–2% lead, 0.003–2% bismuth and 0.0001–2% of indium.

5,082,623

METHOD OF MANUFACTURING A SPLIT CIRCULAR RING

Ragnar Ekbom, Finspang, Sweden, assignor to ABB Stal AB, Finspang, Sweden

Filed May 31, 1990, Ser. No. 531,236
Claims priority, application Sweden, Jun. 1, 1989, 89019830
Int. Cl.[5] B22F *7/04*
U.S. Cl. 419—8 **6 Claims**



1. A method of preparing a parted circular ring comprising isostatically hot pressing a powder in a casing having radial partitions provided therein, said partitions being of the same material as the powder used during the isostatic hot pressing

and having a coating of release agent on one side of the partitions.

5,082,624

NIOBIUM CONTAINING TITANIUM ALUMINIDE RENDERED CASTABLE BY BORON INOCULATIONS

Shyh-Chin Huang, Latham, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 26, 1990, Ser. No. 589,827
Int. Cl.[5] C22C *14/00*
U.S. Cl. 420—418 **12 Claims**

1. A castable composition comprising titanium, aluminum, niobium, and boron in the following approximate composition:

$$Ti_{34-50.5}Al_{43-48}Nb_{6-16}B_{0.5-2.0}$$

5,082,625

CORROSION-RESISTANT ALLOY FOR BUILD-UP WELDING

Sinji Kato, Aichi; Soya Takagi, Toyota; Minoru Kawasaki, Toyota; Kazuhiko Mori, Toyota, and Katsuhiko Ueda, Aichi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Continuation-in-part Ser. No. 339,896, Apr. 18, 1989, abandoned, which is a continuation of Ser. No. 143,641, Jan. 13, 1988, abandoned. This application Dec. 6, 1989, Ser. No. 446,818
Claims priority, application Japan, Jan. 14, 1987, 62-7223
Int. Cl.[5] C22C *19/03, 19/05, 30/02*
U.S. Cl. 420—453 **4 Claims**

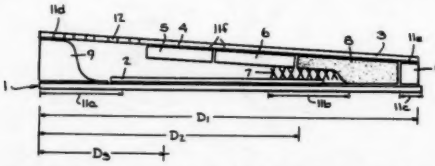
1. A corrosion-resistant alloy for build-up welding, containing 0.5 to 2.3 wt % of copper, 0.1 to 5.3 wt % of molybdenum, 1.0 to 29.0 wt % of at least one carbide forming element except molybdenum, 1.0 to 30.0 wt % of iron, 0.6 to 2.5 wt % of silicon, 0.008 up to 1.0 wt % of boron, and 0.04 to 1.6 wt % of carbon, the remainder being composed of nickel and incidental impurities.

5,082,626

WEDGE SHAPED TEST STRIP SYSTEM USEFUL IN ANALYZING TEST SAMPLES, SUCH AS WHOLE BLOOD

Henry M. Grage, Jr., Indianapolis, Ind., assignor to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Aug. 8, 1988, Ser. No. 230,303
Int. Cl.[5] G01N *1/18, 33/48*
U.S. Cl. 422—56 **27 Claims**



1. Apparatus for analysis of a fluid sample, comprising:

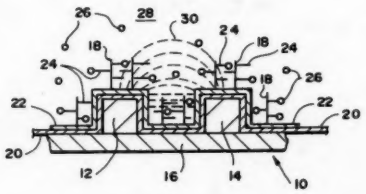
a carrier means and a covering means, each of which has two end portions and two sides between said two end portions, wherein a portion of said carrier means and said covering means are joined and a second portion of said carrier means and said covering means are joined to form a hollow space between said covering means and said carrier means, wherein said joined first portions have a greater vertical dimension than said joined second portions so as to form a wedge shape thereby, said covering means having a sample application port positioned thereon, a fluid transport facilitating means positioned in said hollow space beginning at said first end and terminating before said second end, at least one reagent means positioned between said fluid transport facilitation means and said second end, and a fluid absorption means positioned between said at least one reagent means and said second ends wherein there is hollow space even when the reagent means, fluid transport facilitating means and absorption means are positioned in the apparatus.

5,082,627

THREE DIMENSIONAL BINDING SITE ARRAY FOR INTERFERING WITH AN ELECTRICAL FIELD

William D. Stanbro, Columbia, Md., assignor to Biotronic Systems Corporation, Rockville, Md.

Filed May 1, 1987, Ser. No. 44,761
Int. Cl.[5] G01N *27/00*
U.S. Cl. 422—82.01 **2 Claims**



1. An apparatus for detecting an analyte comprising:

an electrode for generating an electrical field;

a means for interfering with the electrical field comprising a biochemically active layer that comprises a plurality of polylysine backbones, and a silane for binding each polylysine backbone and extending each polylysine backbone into the electrical field; and

a means for enhancing interference with the electrical field according to a concentration of an analyte, comprising a plurality of receptor molecules biospecific to the analyte and bound to and extending from each polylysine backbone, each receptor molecule being biospecific to the analyte.

5,082,628

LUMINOMETER

Peter E. Andreotti, Lauderhill; Irwin S. Morse, Miami; Jerry T. Thornthwaite, Miami; Malcolm L. Heimer, Miami; Jorge D. Salinger, Miami, and Joseph J. Sobodowski, Miami, all of Fla., assignors to Park Pharmaceuticals, Inc., Miami, Fla.

Filed Sep. 19, 1989, Ser. No. 409,108
Int. Cl.[5] G01N *21/00, 21/76*
U.S. Cl. 422—82.08 **7 Claims**

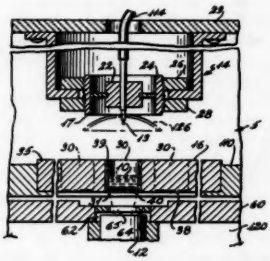
1. A luminometer comprising:

(a) a movable table adapted for positioning thereon of at least one opaque sample holder plate characterized by having a multiplicity of sample wells in rows and columns and by each sample well having a transparent bottom wall;

(b) at least one stationary reagent injector nozzle positioned above said table;

(c) at least one stationary light detector positioned beneath said table, said reagent injector nozzle and light detector being in line of sight registry;

(d) an X-Y movement mechanism operatively connected to said table to move said table and a sample holder plate positioned on said table so that one by one every sample well on a said plate can be interposed into the line of sight registry of said reagent injector nozzle with said light detector whereby a burst of luminescence generated in the sample well within the line of sight registry of said injector nozzle and said light detector may be received by said light detector to be a luminescence assay;



(e) means for preventing light emitted from any sample well not in line of sight registry with said light detector from impinging therein; and

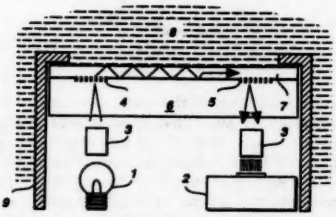
(f) means for generating and displaying and/or recording a signal that is in a predetermined proportion to the intensity of the detected luminescence as the output signal assay results from said light detector.

5,082,629

THIN-FILM SPECTROSCOPIC SENSOR

Lloyd W. Burgess, Jr., Seattle, and Don S. Goldman, Richland, both of Wash., assignors to The Board of the University of Washington, Seattle and Battelle Development Corporation, Richland, both of, Wash.

Filed Dec. 29, 1989, Ser. No. 459,078
Int. Cl.[5] G01N *21/00*
U.S. Cl. 422—82.11 **27 Claims**



1. An integrated spectrometer for chemical analysis by evanescent electromagnetic radiation absorption in a reaction volume, comprising:

a noninteractive sample waveguide having a uniform thickness and having a first surface and a second surface, and having an electromagnetic radiation entrance end and exit end, wherein the first surface communicates with the reaction volume along the region between the entrance end and exit end of the sample waveguide;

a substrate having a top surface and a bottom surface and comprising a material characterized by allowing for the transmission of electromagnetic radiation, an entrance grating and an exit grating etched or deposited on the top surface of the substrate, such that the entrance grating communicates with the entrance end and the second surface of the waveguide and couples electromagnetic radiation into the waveguide, and the exit grating communicates with the exit end and the second surface of the waveguide and couples electromagnetic radiation out of the waveguide, wherein the gratings comprise parallel spacings and wherein the refractive index of the substrate is different from the refractive index of the waveguide;

an electromagnetic radiation source directed toward the entrance grating; and

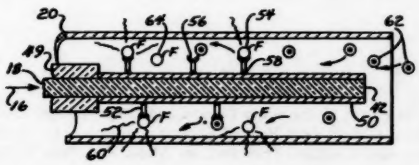
an electromagnetic radiation sensing device directed toward the exit grating.

5,082,630

FIBER OPTIC DETECTOR FOR IMMUNO-TESTING

Judy K. Partin; Thomas E. Ward, and Alan E. Grey, all of Idaho Falls, Id., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 30, 1990, Ser. No. 516,590
Int. Cl.[5] G01N *21/17*
U.S. Cl. 422—83 **14 Claims**



1. A fiber optic detector apparatus for use in detecting specific molecular compounds in air, comprising:

a. a chamber containing at least one photon sensing device;

b. a clear tube within the chamber having an entry aperture and an exit aperture;

c. an optical fiber within said clear tube, at least a portion of said fiber having adhered thereto a quantity of antibodies specific for said molecular compound, and antigens affixed to the antibodies having a fluorescent compound affixed thereto;

d. air evacuation means connected to the exit aperture; which draws gas from the entry aperture to the exit aperture;

e. a filtered light source directing light into the optical fiber; and

f. an electronic package connected to the photon sensing device comprising power supply and alarm means, such that when a change in fluorescence is detected by the photon sensing device, the alarm means is activated.

5,082,631

TRANSPORT TRAY WITH PIVOTAL CIRCULAR CAM RAMP FOR BIOLOGICAL SAMPLES

Voigt O. Lenmark, Sr., St. Louis Park, and William A. Koentopp, St. Paul, both of Minn., assignors to Transpan Company, Minneapolis, Minn.

Filed Jun. 7, 1990, Ser. No. 534,722
Int. Cl.[5] B01L *3/00*
U.S. Cl. 422—102 **17 Claims**

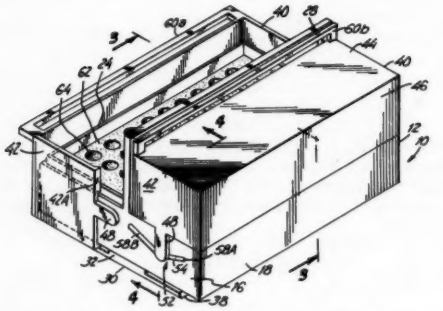
1. A biological vial transport tray comprising:

a tray portion having a base wall, a plurality of end walls and a plurality of side walls, the base wall having a bottom surface and a top surface, the end walls and side walls forming a rim around the tray portion;

a pedestal attached to the bottom surface of the base wall for supporting the tray portion on a supporting surface;

a pair of cover lids, each cover lid having a pair of end cover walls, a top cover wall, a side cover wall and a plurality of arms, the cover lids resting on the rim when the cover lids are in a closed position, and cam followers mounted on and extending downwardly from the end cover walls; and

guide means connected to the end wall of the tray portion for receiving the cam followers guiding movement of the



cover lid between an open position and the closed position.

5,082,632

REACTION VESSEL

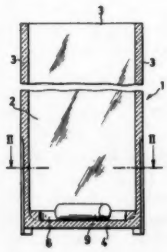
Jürgen Gross, Hofheim am Taunus, and Hugo Wilmes, Liederbach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 30, 1987, Ser. No. 126,734

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1986, 3641093

Int. Cl.[5] G01N *21/03*

U.S. Cl. 422—102 **1 Claim**



1. A reaction vessel for optical investigations, comprising:

a floor;

sidewalls extending upwardly from said floor to define a cell;

a circular depression formed in said floor;

a cylindrical body rotatably mounted in said circular depression for mixing reactants disposed in the vessel;

a plurality of arcuate channels formed in said floor and extending from the periphery of said circular depression toward said sidewalls.

5,082,633

MIX HEAD FOR MIXING REACTIVE CHEMICALS

John Stuper, Akron, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 14, 1990, Ser. No. 538,298

Int. Cl.[5] B01J *19/26*

U.S. Cl. 422—133 **12 Claims**

1. A mix head for mixing at least two reactive chemicals under high pressure comprising

(a) a mix head body defining within said body

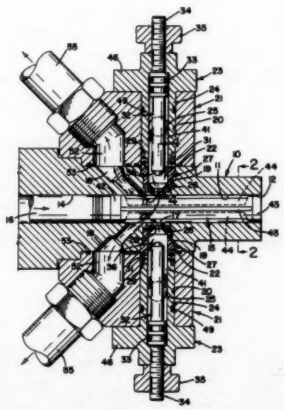
(1) an elongated mixing chamber for mixing said chemicals, said mixing chamber having first and second opposite ends and a longitudinal axis and being closed at the first end and having an opening at the second end;

(2) at least two inlet ports in the wall of said chamber for separately introducing said chemicals into the chamber by injection therethrough, said inlet ports being located between said opposite ends and being axially spaced from said second end; and

(3) at least one discharge outlet in direct communication with said opening at the second end and axially aligned with and axially spaced from said inlet ports for discharging said chemicals after mixing;

(b) a plunger fitted and slidably positioned in the mixing chamber, mounted for reciprocal axial movement along the longitudinal axis of the mixing chamber between a retracted injection position, wherein the reactive chemicals are injected through the inlet ports into the chamber to form a mixture in said chamber, and an extended position, wherein the plunger is advanced to the discharge outlet to drive the mixture from the chamber and to prevent the mixing of additional chemicals until the plunger is returned to the retracted position; and

(c) at least two nozzles assemblies replaceably mounted in the mix head body substantially normal to the mixing chamber and aligned with the respective inlet ports in the mixing chamber to separately inject the respective reac-



tive chemicals through the respective inlet ports into the mixing chamber such that impingement mixing of the chemicals occurs, each of said assemblies having

(1) a nozzle body defining a bore having a longitudinal axis and having an inlet for receiving one of the reactive chemicals at one end of the bore and a connecting device at the other end of the bore, said nozzle body being constructed of a structurally stable material,

(2) a tubular support means replaceably connected to the connecting device of the body such that said means is in coaxial alignment with the axis of the nozzle body, and

(3) an orifice member coaxially aligned with and replaceably and securely mounted in the support means and constructed of a non-adherent, chemically-inert, abrasion resistant material different from the material of the nozzle body, said support means being constructed of an essentially non-adherent, chemically inert material different from the material of the nozzle body and the abrasion resistant material and (i) being structurally sufficient to securely hold the orifice member in an aligned and spaced apart relationship to the nozzle body during operation of the mix head, and (ii) having a coefficient of thermal expansion greater than the corresponding coefficients of either of said orifice member and nozzle body such that said support means is effective by thermal expansion during normal operation of

the mix head to prevent exudation of chemicals between said support means and said orifice member or between said support means and said nozzle body.

5,082,634

GAS DISTRIBUTION PLATE FOR FLUIDIZATION

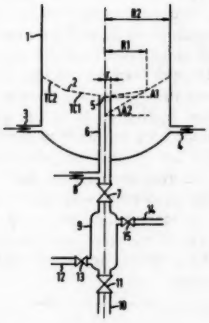
Charles Raufast, Saint Julien les Martigues, France, assignor to BP Chemicals Limited, London, England

Continuation of Ser. No. 157,168, Feb. 11, 1988, abandoned, which is a continuation of Ser. No. 862,284, May 12, 1986, abandoned. This application Jul. 10, 1990, Ser. No. 550,209

Claims priority, application France, May 13, 1985, 85 07180

Int. Cl.[5] B01J *8/44;* **F27B** *15/09*

U.S. Cl. 422—143 **24 Claims**



6. In a process for fluidizing a powder in fluidized bed, providing apparatus comprising:

a hollow cylindrical vessel having a vertical cylinder axis and an interior wall surface defining an upper reactor portion of radius R_2 and a lower portion;

a fluidization grid extending from said wall surface toward said axis and disposed intermediate said upper reactor portion and said lower portion and separating said upper reactor portion from said lower portion, said fluidization grid having a bed of powder to be fluidized on said fluidization grid, and having a central opening substantially coaxial with said axis and of a radius r, a first grid portion TC_1 having an upper surface in the shape of a truncated cone and extending radially outwardly and upwardly from said opening and a second grid portion TC_2 having an upper surface in the shape of a truncated cone adjoining said upper surface of said first grid portion TC_1 and extending radially outwardly and upwardly from said first grid portion TC_1 to said interior wall surface, both said first grid portion TC_1 and said second grid portion TC_2 being coaxial with said vertical axis and being disposed with their truncated apices pointing downwardly;

the generatrix of the upper surface of said first grid portion TC_1 forming an angle A_1 with a horizontal plane substantially perpendicular to said vertical axis, said angle A_1 being from 0° to not greater than 15° and said first grid portion TC_1 having an upper circular base of radius R_1 and an open lower circular base of said radius r;

the generatrix of the upper surface of said second grid portion TC_2 forming an angle A_2 greater than angle A_1, greater than 10° and at least equal to the angle which will cause granules or agglomerates deposited on said second grid portion TC_2 to slide by gravity along the second grid portion to the first grid portion TC_1, but not greater than 30° with a horizontal plane substantially perpendicular to said vertical axis and said second grid portion TC_2 having an upper circular base of said radius R_2 and a lower circular base of said radius R_1, whereby said first grid portion TC_1 extends from said central opening to said second grid portion TC_2 and said second grid portion TC_2 extends from said first grid portion TC_1 to said interior wall surface;

a discharge pipe extending from exteriorly of said vessel and from below said fluidization grid to said central opening in said fluidization grid;

a discharge chamber exteriorly of said vessel interconected with said discharge pipe by a full-flow, rapid opening valve, said discharge chamber having a volume (V); and

wherein said radius R_1 is greater than said radius r, the ratio of said radius R_1 to $(V)^{\frac{1}{3}}$ is not greater than 0.8 and the ratio of said radius R_1 to said radius R_2 is at least equal to 0.2 but not greater than 0.8,

said process comprising supplying a fluidizing gas under pressure to said lower part of said vessel and providing a pressure in said bed of powder which is at least five times the pressure in said discharge chamber.

5,082,635

HIGH-PRESSURE CRYSTALLOGRAPHIC OBSERVATION APPARATUS

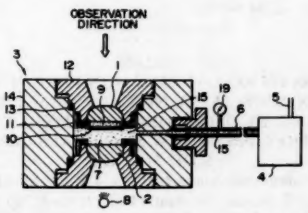
Masao Wakatsuki; Kaoru Takano, both of Tsukuba; Kazuo Kitagawa, Kobe; Katsufumi Urabe, Ashiya, and Toshimitsu Ishida, Akashi, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Dec. 11, 1989, Ser. No. 448,287

Claims priority, application Japan, Feb. 28, 1989, 1-49074; Feb. 28, 1989, 1-49075; Sep. 22, 1989, 1-247800

Int. Cl.[5] B01D *9/00*

U.S. Cl. 422—245 **13 Claims**



1. A high-pressure crystallographic observation apparatus comprising:

a pressure vessel having a cavity and provided with transparent observation window blocks respectively in the opposite walls thereof;

pressurizing means for pressurizing the cavity of the pressure vessel; and

small elastic sample containing means for containing a sample, provided within the cavity of the pressure vessel.

5,082,636

MAINTAINING RELATIVE HUMIDITY IN GAS STERILIZERS AND HUMIDIFYING DEVICE FOR USE WITH GAS STERILIZERS

Harold W. Andersen, Oyster Bay, N.Y., assignor to H. W. Andersen Products, Inc., Oyster Bay, N.Y.

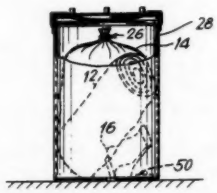
Filed Oct. 4, 1989, Ser. No. 416,896

Int. Cl.[5] A61L *2/20*

U.S. Cl. 422—294 **11 Claims**

1. A package containing items which will be sterilized while in the package, comprising a sealed enclosure made at least partially of a gas-permeable film, said items being disposed in said enclosure, and a humidifying device disposed in said enclosure, said humidifying device comprising an absorbent material containing moisture and a cover means in which said absorbent material is disposed, said cover means being made at

least partially of a hydrophobic and vapor-permeable material such that moisture absorbed by said absorbent material passes



through said vapor-permeable material to humidify said enclosure during sterilization.

5,082,637

REMOVAL OF POTASSIUM FROM AMMONIUM MOLYBDATE

Michael J. Cheresnowsky, and Timothy J. Hoffman, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Nov. 2, 1990, Ser. No. 608,447
Int. Cl.[5] C01G *39/00*
U.S. Cl. 423—55 **2 Claims**

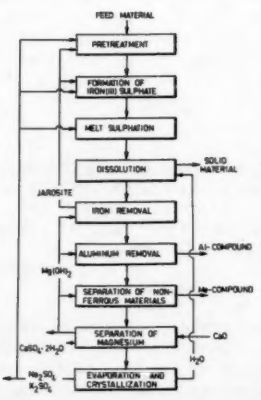
1. The method of processing ammonium dimolybdate (ADM) crystals containing potassium as an impurity comprising the steps of dissolving the ADM crystals directly in hot acid, allowing the acid solution to cool thereby precipitating molybdenum trioxide out of the solution, and then removing, washing and drying the molybdenum trioxide whereby the potassium content of the molybdenum trioxide is lower than that of said ADM crystals.

5,082,638

PROCESS OF RECOVERING NON-FERROUS METAL VALUES, ESPECIALLY NICKEL, COBALT, COPPER AND ZINC, BY USING MELT AND MELT COATING SULPHATION, FROM RAW MATERIALS CONTAINING SAID METALS

Pekka J. Saikkonen, Alakartanontie 4 B 63, SF-02360 Espoo, and Jussi K. Rastas, Bredantie 8 D 19, SF-02700 Kauniainen, both of Finland

Filed Nov. 30, 1990, Ser. No. 576,478
Claims priority, application Finland, Mar. 31, 1988, 881531
Int. Cl.[5] C01G *49/14*
U.S. Cl. 423—145 **9 Claims**



1. A process of recovering non-ferrous metal values, especially nickel, cobalt, zinc, manganese and magnesium from raw materials containing said metals, by converting the non-ferrous metal values into sulphates by melt and melt coating sulphation and recovering non-ferrous metal compounds comprising:

(a) when necessary, pretreating the raw material to convert the metals therein into oxidic and ferritic forms;

(b) forming a reaction mixture containing the pretreated raw materials and sufficient amounts of iron(III)sulphate and alkali metal sulphates to permit complete sulphation;

(c) melt sulphatizing and melt coating sulphatizing the reaction mixture to cause formation of metal sulphates;

(d) dissolving the metal sulphates in water to form a solution and separating the undissolved solid material from the solution;

(e) precipitating iron(III) from the solution as alkali metal jarosite and recycling the alkali metal jarosite to the formation step described in paragraph (b);

(f) separating the non-ferrous metals from the solution by fractionation or combined hydroxide or sulphide precipitation, ion exchange or liquid-liquid extraction;

(g) precipitating magnesium from the solution by the addition of lime thereby forming calcium hydroxide and gypsum, separating the gypsum from the solution, separating the magnesium hydroxide from the solution, recycling magnesium hydroxide to either of the steps described in paragraphs (e) and (f) and removing any excess magnesium hydroxide from the process; and

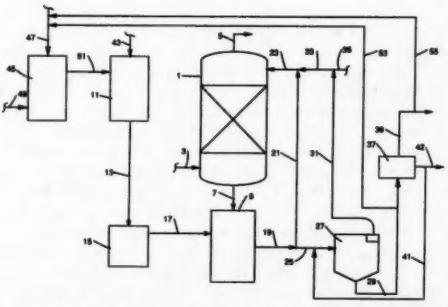
(h) separating the alkali metal sulphates from the solution by evaporation crystallization, recycling the alkali metal sulphates to any of the steps described in paragraphs (a), (b) and (c), and removing any excess alkali metal sulphates from the process.

5,082,639

SULFUR DIOXIDE REMOVAL FROM GASES USING A MODIFIED LIME

Yungli J. Lee, Pittsburgh, and Lewis B. Benson, Coraopolis, both of Pa., assignors to Dravo Lime Company, Pittsburgh, Pa.

Filed Nov. 6, 1990, Ser. No. 610,151
Int. Cl.[5] C01B *17/00*; C01F *11/46*
U.S. Cl. 423—242 **8 Claims**



1. In a process for removing sulfur dioxide from combustion gases by contacting the gases in a wet scrubbing unit with an aqueous scrubbing slurry, containing calcium components, for the removal of the sulfur dioxide, the calcium components provided in said slurry by adding aqueous slaked lime thereto, and a portion of the effluent from the scrubbing unit, containing calcium sulfite solids, is clarified to remove calcium sulfite solids therefrom as an aqueous sludge, the improvement wherein the aqueous slaked lime added to said scrubbing slurry is formed by mixing lime and water, with the water containing a calcium sulfur-oxide salt in an amount sufficient to provide between about 0.3 to 5.0 percent by weight of said calcium sulfur-oxide salt based on said lime, whereby the average particle size of calcium sulfite solids in said aqueous sludge is in-

creased to provide improved separation of water of said aqueous sludge therefrom.

5,082,640

METHOD OF MAKING LUMINESCENT GRADE BORON PHOSPHATE

Chung N. Chau, Sayre, Pa., and Jeffrey A. Smith, Columbia, Md., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 23, 1991, Ser. No. 749,388

Int. Cl.[5] C01B *35/10*

U.S. Cl. 423—277 **3 Claims**

1. A method of making luminescent grade boron phosphate according to the reaction

$$(NH_4)_2HPO_4+H_3BO_3\rightarrow BPO_4+2NH_3+3H_2O,$$

comprising the steps of:

a) combining boric acid and diammonium phosphate in a molar ratio of at least 1.3 moles of boric acid to 1 mole of diammonium phosphate to form a blended mixture;

b) firing said mixture at about 1000° C. for about 2 hours in air to form said boron phosphate; and

c) washing said boron phosphate with a solution of ammonium hydroxide.

5,082,641

SILICON/TITANIUM OXIDE MFI ZEOLITES

Jean-Michel Popa, Drancy; Jean-Luc Guth, Mulhouse, and Henri Kessler, Wittenheim, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed May 23, 1988, Ser. No. 197,821

Claims priority, application France, May 22, 1987, 87 07187; Mar. 30, 1988, 88 04167

Int. Cl.[5] C01B *33/34*

U.S. Cl. 423—326 **26 Claims**

1. A calcined MFI zeolite having the formula:

$$(Si_{96-x}Ti_x)O_{192}$$

wherein x ranges from about 0.1 to 6, said MFI zeolite having a monoclinic crystalline network.

5,082,642

METHOD FOR CATALYZING OXIDATION/REDUCTION REACTIONS OF SIMPLE MOLECULES

David Bickar, Baltimore, Md.; Celia Bonaventura, and Joseph Bonaventura, both of Beaufort, N.C., assignors to Duke University, Durham, N.C.

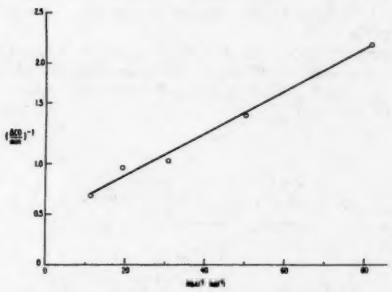
Continuation of Ser. No. 328,802, Mar. 23, 1989, abandoned, which is a continuation of Ser. No. 179,981, Apr. 11, 1988, abandoned, which is a division of Ser. No. 648,952, Sep. 10, 1984, Pat. No. 4,751,068. This application Oct. 31, 1990, Ser. No. 607,634

Int. Cl.[5] C01B *21/22*

U.S. Cl. 423—402 **18 Claims**

1. A method of oxidizing NO to NO_2, comprising:

(i) contacting, together, NO, a nitrogen-containing chelating agent and water; wherein said chelating agent is at least one member selected from the group consisting of porphines, hemes, phthalocyanines, ethioporphyrins, sirohemes, and derivatives thereof, bound to a support, wherein said support is glass, a natural fiber, a synthetic fiber, a gel, charcoal, carbon ceramic material, a metal



oxide, a synthetic polymer, a zerolite, a silica compound or an alumina compound; and

(ii) obtaining NO_2.

5,082,643

PROCESS AND CATALYST FOR THE CONVERSION OF CO/H_2O MIXTURES

Ulrich Schubert, Würzburg, and Klaus Rose, Kitzingen, both of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Förderung der Angewandten Forschung E.V., Munich, Fed. Rep. of Germany

Filed Oct. 14, 1988, Ser. No. 257,803

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1987, 3735127

Int. Cl.[5] C01B *31/18, 3/12*

U.S. Cl. 423—415 R **25 Claims**

1. A process for the catalytic conversion of CO/H_2O mixtures to CO_2 or a mixture thereof with H_2, using rhodium complex catalysts, which process comprises carrying out the reaction in the presence of solid, polymer rhodium complex catalysts which are insoluble in aqueous and organic solvents, obtained by polycondensation of one or more rhodium complexes having at least one ligand which contains at least one group capable of coordinating to rhodium and at least one group forming an inorganic network in the polycondensation with itself;

wherein the rhodium complex has the general formula I:

$$(L_aL'_bRhX_c)_d \qquad (I)$$

in which L is a ligand containing an electron-donating group capable of coordinating to rhodium and a group forming an inorganic network in the polycondensation; L' is a electron-donating ligand different from L; X is an organic or inorganic anion necessary for charge neutralization; a has a value from 1 to 4; b has a value from 0 to 4; c has a value from 0 to 3, the sum (a+b+c) being smaller than or equal to 6; and d is a whole number having a value greater than or equal to 1; and

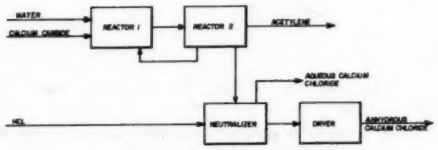
wherein L is a phosphine as coordinating group, an alkoxysilane, alkoxyaluminum, alkoxy titanium or alkoxyboron group as inorganic network forming group; L' is a phosphine, carbonyl or amino ligand.

5,082,644

APPARATUS AND PROCESS FOR THE PRODUCTION OF ACETYLENE

James W. Bunger; Hoil Ryu, and Prasad A. V. Devineni, all of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Continuation of Ser. No. 434,270, Oct. 30, 1989, abandoned.
This application May 17, 1991, Ser. No. 704,713
Int. Cl.[5] C01F *11/28, 11/02;* C10H *15/00*
U.S. Cl. 423—497 19 Claims



1. A process for the production of acetylene which comprises;

(i) continuously adding an excess of water and particulate calcium carbide to a primary reactor,

(ii) contacting in the primary reactor the water and calcium carbide for reaction to form acetylene gas and calcium hydroxide under aqueous phase reaction conditions with a residence time to react between 60% and 90% of the calcium carbide,

(iii) transferring the unreacted calcium carbide to a secondary reactor,

(iv) reacting the unreacted calcium carbide in the secondary reactor under plug-flow reaction conditions,

(v) recovering acetylene gas generated in the primary reactor and the secondary reactor, and,

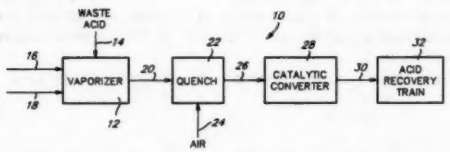
(vi) recovering calcium hydroxide from the secondary reactor.

5,082,645

WASTE ACID RECOVERY PROCESS

Riad A. Al-Samadi, Burlington, and Cheung K. Li Kwok Cheong, Cornwall, both of Canada, assignors to Chemetics International Company, Ltd., Ontario, Canada

Filed Aug. 24, 1990, Ser. No. 571,786
Int. Cl.[5] C01B *17/50, 17/74, 17/90*
U.S. Cl. 423—531 9 Claims



1. A process for the generation of sulphur trioxide from a waste acid stream comprising sulphuric acid and sulphated ammonium compounds, said process comprising:

a) vaporizing said waste acid stream at a temperature sufficient to generate a sulphate-free gas stream comprising sulphur trioxide, sulphur dioxide and ammonia gases; and

b) feeding said gas stream to catalytic conversion means to effect conversion of said sulphur dioxide to sulphur trioxide, and conversion of said ammonia to other nitrogen containing gases, to provide a converter exit gas comprising sulphur trioxide essentially free of sulphur dioxide and ammonia.

5,082,646

FIBROUS MAGNESIUM OXYSULFATE OF GRANULAR FORM AND A METHOD OF PRODUCING SAME

Kouhei Ueno; Tomohiko Akagawa, both of Sakai, and Kazuyoshi Obana, Hirakata, all of Japan, assignors to Ube Industries, Ltd., Japan

Continuation of Ser. No. 371,557, Jun. 23, 1989, abandoned, which is a division of Ser. No. 333,273, Apr. 5, 1989, abandoned.
This application Jul. 24, 1990, Ser. No. 556,856
Claims priority, application Japan, Apr. 5, 1988, 63-83702
Int. Cl.[5] C08F *5/42*
U.S. Cl. 423—554 4 Claims

1. Fibrous magnesium oxysulfate of granular from comprising fibrous agglomerates, said fibrous magnesium oxysulfate having an apparent specific gravity of 0.13–0.25 and an oil absorption of 250–600 ml/100 g, and said fibrous agglomerates comprise fibers having a fiber diameter of 0.1–2.0 μm and a fiber length of 10–100 μm, said fibrous magnesium oxysulfate being produced by removing ball-like portions of 250 μm or more in length therefrom and then converting the resulting product into fibrous magnesium oxysulfate of granular form.

5,082,647

PRODUCTION OF HYDROGEN PEROXIDE

Karl T. Chuang, Edmonton, Canada, assignor to Atomic Energy of Canada Limited, Chalk River, Canada

Filed Oct. 24, 1989, Ser. No. 426,034
Claims priority, application Canada, Oct. 24, 1988, 581080
Int. Cl.[5] C01B *15/01*
U.S. Cl. 423—584 8 Claims

1. A process for manufacturing hydrogen peroxide by the direct oxidation of hydrogen and oxygen in an acidic aqueous medium, which process comprises supplying a catalyst consisting of at least one group VIII metal on a hydrophobic support, and contacting the catalyst with hydrogen and oxygen in an acidic aqueous solution at a hydrogen partial pressure from about 0.3 kPa to 5 MPa and an oxygen partial pressure of 20 kPa to 5 MPa and at a temperature from the freezing point of the aqueous medium to 60° C.

5,082,648

PROCESS FOR THE PREPARATION OF HIGH PURITY CALCIUM TITANATE HYDRATES AND PRODUCT PRODUCED THEREBY

John Damiano, Easton, and Richard C. Griffin, Mount Bethel, both of Pa., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 301,761, Jan. 26, 1989, abandoned. This application Oct. 11, 1990, Ser. No. 596,121
Int. Cl.[5] C01G *23/04;* C01F *11/02*
U.S. Cl. 423—598 17 Claims

1. A process for the production of kassite comprising the steps of:

a. forming a first dispersion of calcium carbonate in an alcohol selected from the group consisting of C_1–C_4 alcohols;

b. adding from about 0.1 to about 1.0 percent by volume of water to the first dispersion to physically bind the water to the surface of the calcium carbonate;

c. adding a solution of water in an alcohol selected from the group consisting of C_1–C_4 alcohols to the resulting dispersion of step (b);

d. adding a solution of a titanium alkoxide in an alcohol selected from the group consisting of C_1–C_4 alcohols to the resulting dispersion of step (b) to hydrolyze the titanium alkoxide and physically bind it to the surface of the calcium carbonate, thereby forming a second dispersion having larger particles than the first dispersion;

e. filtering the alcohol from the second dispersion resulting from step (d) to form a filter cake of calcium carbonate coated with hydrolyzed titanium alkoxide;

f. washing the filter cake with water;

g. forming a new third dispersion of the washed filter cake in water; and

h. subjecting the third dispersion to hydrothermal treatment by heating to a temperature of from about 300 to about 330° C., with resulting increase in the vapor pressure of the dispersion, at a heating rate of from about 0.1 to about 5° C./minute, to form kassite.

5,082,649

METHOD FOR ENHANCING THE SAFETY OF METAL-LIGAND CHELATES AS MAGNETIC RESONANCE IMAGING AGENTS BY ADDITION OF CALCIUM IONS

Donald R. VanDeripe, Lake St. Louis, Mo., assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

Continuation of Ser. No. 68,588, Jun. 30, 1987, abandoned. This application Jun. 22, 1989, Ser. No. 383,056

The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.

Int. Cl.[5] G01N *31/00, 24/00;* A61K *31/28*

U.S. Cl. 424—9 **15 Claims**

1. In a method for enhancing safety in the in vivo use of methal-ligand chelate complexes as magnetic resonance imaging agents comprising administering to a mammal a diagnostically effective amount of a metal-ligand complex, the improvement comprising: adding calcium ions to a charge-balanced metal-ligand complex formed from the anion of a complexing acid and a central ion of an element with an atomic number of 21 to 29, 42, 44, or 57–70, said calcium ions being added in substantially less than stoichiometric amounts to the metal-ligand complex, said calcium ions being provided from a member of the group consisting of inorganic calcium salts, organic calcium salts and mixtures thereof without excess ligand being added.

5,082,650

AMELIORATION OF REDUCTIONS OF COENZYME Q_{10} IN CARDIOMYOPATHY PATIENTS RECEIVING LOVASTATIN

Karl A. Folkers, 6406 Mesa Dr., Austin, Tex. 78731, and Per H. Langsjoen, 3005 El Camino Dr., Temple, Tex. 76502

Filed Sep. 7, 1989, Ser. No. 404,228

Int. Cl.[5] A61K *45/00, 31/405, 31/35, 31/12*

U.S. Cl. 424—10 **1 Claim**

1. A method of ameliorating the reduction of coenzyme Q10 in a patient receiving mevinolin for the treatment of dilated or ischemic cardiomyopathy, said method comprising the concurrent administration of coenzyme Q10 in amounts effective to maintain clinically effective blood levels of coenzyme Q10 and mevinolin in amounts effective to produce clinically effective reductions in levels of cholesterol.

5,082,651

PHARMACEUTICAL COMPOSITIONS

John N. C. Healey, Hitchin, and Marshall Whiteman, Baldock, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed Apr. 25, 1990, Ser. No. 514,634

Claims priority, application United Kingdom, Apr. 26, 1989, 8909559

Int. Cl.[5] A61K *9/12, 31/60, 31/615*

U.S. Cl. 424—45 **7 Claims**

1. A pharmaceutical composition suitable for intra-rectal administration in the form of a foam, which comprises a therapeutically effective amount of 5-aminosalicylic acid, a pharmaceutically acceptable aqueous carrier therefore which carrier contains water in an amount from about 20% (w/w) to about 100% (w/w) and a water-soluble organic polyalcohol selected from propylene glycol, glycerol and a polyethylene glycol and mixtures thereof, in an amount from 0% (w/w) to 80% (w/w) of the carrier, an emulsifying wax in an amount up to 2% (w/w) of the composition, and a liquid or liquified gas propellant, wherein the 5-aminosalicylic acid is present in an amount corresponding to at least 15% (w/w) of the composition.

5,082,652

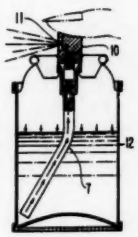
AEROSOL DEODORANT COMPOSITION AND PACKAGED AEROSOL DEODORANT

Larry Mayfield, 12 Corwin St., Kenvil, N.J. 07847; Thomas Russo, 28 Shore Rd., Andover, N.J. 07821; Kenneth Klausner, 28 S. Brookside Dr., Rockaway, N.J. 07866, and Charles Shalotsky, 14 Van Doren Ave., Chatham, N.J. 07928

Filed Aug. 22, 1989, Ser. No. 408,906

Int. Cl.[5] A61K *7/32*

U.S. Cl. 424—47 **29 Claims**



1. An aerosol deodorant composition comprising:
an aerosol propellant;
a volatile low-viscosity fluid;
an oil absorbent particulate material;
a silicone polymer; and
a deodorant active material; wherein said aerosol deodorant composition does not contain an antiperspirant active material.

5,082,653

ANTI-PLAQUE COMPOSITIONS COMPRISING A COMBINATION OF MORPHOLINOAMINO ALCOHOL AND ANTIBIOTIC

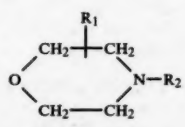
Pauline E. Pan, Morris Plains, and Linda D. Sturdivant, East Orange, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 31, 1990, Ser. No. 606,240

Int. Cl.[5] A61K *7/16, 7/22*

U.S. Cl. 424—54 **10 Claims**

1. A composition having synergistic anti-plaque or anti-gingivitis activity comprising in combination a synergistic pharmaceutically effective amount of a) a morpholinoamino alcohol or pharmaceutically - acceptable salt thereof, wherein said morpholinoamino alcohol has the chemical formula

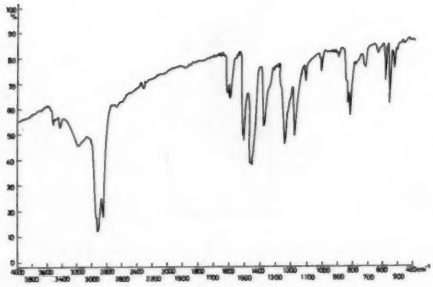


wherein R_1 is a straight or branched alkyl group containing 8 to 16 carbon atoms at the 2- or 3-position of the morpholino ring, and R_2 is a straight or branched alkyl group containing 2 to 10 carbon atoms terminating with a hydroxy group and (b) an antibiotic, wherein the amount of said morpholinoamino alcohol or salt thereof ranges from about 0.1% to about 5% by weight, and the amount of said antibiotic ranges from about 10^{-3} molar to about 10^{-10} molar based on total weight of said composition.

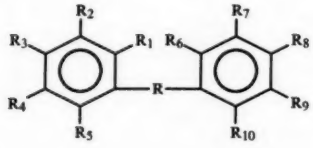
5,082,654
CLATHRATE COMPOUND AND PROCESS FOR STABILIZING DIETHYLTOLUAMIDE

Hideo Sugi; Ryoichi Takahashi, and Kenji Tahara, all of Tokyo, Japan, assignors to Kurita Water Industries Ltd., Tokyo, Japan

Filed Oct. 19, 1989, Ser. No. 423,378
Claims priority, application Japan, Oct. 28, 1988, 63-272716
Int. Cl.[5] A61K *31/165;* **A01N** *27/00;* **C07C** *233/65*
U.S. Cl. 514—617 **4 Claims**



1. A clathrate compound comprising diethyltoluamide and bisphenol compounds represented by the following formula, ratio of diethyltoluamide to bisphenol compounds being 10:90 to 90:10 by weight;



where R denotes an alkylene group having carbon number of 1– 6, an alkylidene group having carbon number of 1–6, sulfur atom of sulfone; and R_1 to R_{10} independently denote a hydrogen atom, hydroxyl group, halogen atom or alkyl group, with at least one of R_1 to R_5 and at least one of R_6 to R_{10} being a hydroxyl group,

said bisphenol compound being one or more species selected from the following compounds (a) to (e);

(a) 4,4'-cyclohexylidenebisphenol,
(b) bis(4-hydroxyphenyl) sulfone,
(c) 4,4'-butylidenebis(6-tert-butyl-3-methylphenol),
(d) 2,2'-methylenebis(4-methyl-6-tert-butylphenol),
(e) 4,4'-thiobis(6tert-butyl-3-methylphenol).

5,082,655
PHARMACEUTICAL COMPOSITION FOR DRUGS SUBJECT TO SUPERCOOLING

Wallace C. Snipes, Pine Grove Mills, and Neena Agarwala, University Park, both of Pa., assignors to Zetachron, Inc., State College, Pa.

Continuation-in-part of Ser. No. 918,273, Oct. 14, 1986, Pat. No. 4,806,337, which is a continuation-in-part of Ser. No. 633,604, Jul. 23, 1984, Pat. No. 4,629,621. This application Feb. 17, 1989, Ser. No. 311,960
The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.
Int. Cl.[5] A61K *31/74, 9/22;* **A01N** *25/08, 25/34*
U.S. Cl. 424—386 **59 Claims**

1. A sustained release composition for releasing a biologically active compound into an aqueous liquid environment comprising a biologically active compound dispersed in a matrix which, when contacted with an aqueous liquid, erodes progressively, said matrix having a melting point below that of said biological compound and said matrix comprising a mixture of

a.) 5% to 100% by weight of a solid water-dispersible polyether diol having a molecular weight from about 1000 to about 20,000, selected from the group consisting of polyethylene glycols and polyethylene oxide-polypropylene oxide block copolymers, and

b.) 95% to 0% by weight of an erosion rate modifier which is an amphiphilic compound insoluble in said aqueous liquid, the molecular structure of said amphiphilic compound having a lipophilic portion and a hydrophilic portion.

5,082,656
TOPICAL ANTIBACTERIAL COMPOSITIONS CONTAINING PENETRATION ENCHANCERS

Ho-Wah Hui, Vernon Hills; Chung-Chiang Hsu, Libertyville, and Madhu K. Vadnere, Grayslake, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 108,175, Oct. 13, 1987, abandoned, which is a continuation-in-part of Ser. No. 44,521, Apr. 30, 1987, abandoned. This application Dec. 1, 1989, Ser. No. 444,491
Int. Cl.[5] A61K *31/79, 31/74*
U.S. Cl. 514—24 **11 Claims**

1. An antibacterial composition for topical administration comprising:

a) from about 0.5 to about 10 percent of an antibacterial compound selected from erythromycin, tetracycline, clindamycin and meclocycline;

b) from about one to about 30 percent of a non-water soluble, non-hydrogel forming polymeric composition selected from ethylcellulose, esters of poly(methylvinyl ether/maleic acid) polymers and polyvinyl pyrrolidone/-hexadecene copolymers;

c) from about 0.5 to about 40 percent of a penetration enhancing plasticizer selected from peppermint oil, geranyl acetate, geraniol, eucalyptol oil, trans-cinnamaldehyde, carvyl propionate, p-anisaldehyde, carvyl acetate, menthyl acetate, menthone and cinnamylalcohol said penetration enhancing plasticizer providing enhanced skin penetration of the antibacterial compound relative to a composition not comprising said penetration enhancing plasticizer;

d) from about 50 to about 95 percent of a non-toxic nonirritating solvent in which said polymeric composition and plasticizer are dissolved;

whereby upon topical application of said antibacterial composition, said solvent will evaporate or penetrate the skin and leave a thin protective film of polymeric composition which retains said antibacterial compound against the skin.

5,082,657
LEUKOREGULIN, AN ANTITUMOR LYMPHOKINE, AND ITS THERAPEUTIC USES

Janet H. Ranson, Germantown, Md., assignor to Akzo N.V., Arnhem, Netherlands

Division of Ser. No. 906,353, Sep. 11, 1986, which is a continuation-in-part of Ser. No. 721,060, Apr. 8, 1985, abandoned, which is a continuation-in-part of Ser. No. 600,303, Apr. 13, 1984, abandoned. This application May 11, 1989, Ser. No. 350,879
Int. Cl.[5] A61K *37/00;* **C07K** *15/00*
U.S. Cl. 424—85.1 **4 Claims**

1. A method for regulating tumor cell physiology and growth in carcinoma tumors without affecting normal cell growth, comprising administering leukoregulin to a mammal in an amount effective to inhibit carcinoma tumor cell growth.

5,082,658

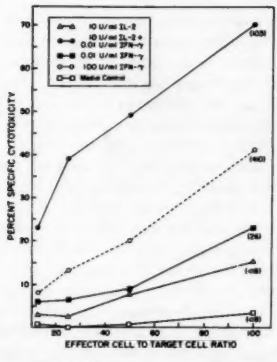
GAMMA INTERFERON-INTERLEUKIN-2 SYNERGISM

Michael A. Palladino, San Mateo, Calif., assignor to Genentech, Inc., San Francisco, Calif.

Continuation of Ser. No. 904,824, Sep. 8, 1986, abandoned, which is a continuation of Ser. No. 571,174, Jan. 16, 1984, abandoned. This application Mar. 2, 1990, Ser. No. 488,486

Int. Cl.[5] A61K *37/66, 37/02;* C07K *15/06, 15/26*

U.S. Cl. 424—85.2 4 Claims



1. A process for inhibiting tumor cell growth which comprises administering to a subject mammal in need of such treatment synergistically effective amounts of human IL-2 and human IFN-γ.

5,082,659

METHODS AND COMPOSITIONS EMPLOYING INTERFERON-GAMMA

W. Robert Fleischmann, Galveston, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 916,008, Oct. 6, 1986, Pat. No. 4,950,470. This application May 23, 1990, Ser. No. 527,519

Int. Cl.[5] A61K *37/66*

U.S. Cl. 424—85.5 6 Claims

1. A method for reducing the development of resistance associated with alpha, beta, or combined alpha/beta interferon therapy in a patient undergoing such therapy comprising administering to the patient a pharmaceutically acceptable preparation which includes an amount of interferon gamma that is effective to reduce the development of interferon-associated resistance, wherein the interferon gamma preparation is administered to the patient before or after, but not in combination with, said alpha, beta or combined alpha/beta interferon therapy.

5,082,660

INVISIBLE FOUNDATION COMPOSITION

Hovic O. Ounanian, Princeton Junction, N.J.; Natividad R. Jose, Jamaica, N.Y.; Joseph DiSomma, Ramsey, and Harvey Gedeon, Allendale, both of N.J., assignors to Revlon, Inc., New York, N.Y.

Filed Oct. 26, 1990, Ser. No. 604,039

Int. Cl.[5] A61K *7/035, 7/42, 7/44, 7/02*

U.S. Cl. 424—63 5 Claims

1. A foundation composition comprising 1.5–30% of a light scattering agent which is a spherically shaped inorganic material of diameter up to about 30 microns, 5–35% of a matte finishing agent selected from the group consisting of silica, hydrated silica, mica, talc, polyethylene, titanium dioxide, bentonite, hectorite, kaolin, chalk, diatomaceous earth, attapulgite, low lustre pigment, or mixtures thereof, 5–35% of a moisturizing agent, 10–60% water, and about 1–10% of an ultraviolet absorbing agent.

5,082,661

ODORLESS COSMETIC COMPOSITIONS IN GELATIN CAPSULES

Joseph Melnik, Milford; Michael C. Cheney, Fairfield, both of Conn., and Anthony Vargas, Mahwah, N.J., assignors to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.

Filed Sep. 26, 1990, Ser. No. 588,250

Int. Cl.[5] A61K *7/021, 9/64*

U.S. Cl. 424—401 13 Claims

1. A cosmetic product comprising:

a capsule having walls formed of a gelatin; and

a cosmetic composition pharmaceutically acceptable to a human body, said composition comprising:

(i) from about 5 to about 99% by weight of a pharmaceutically acceptable carrier compatible with said gelatin walls which is a silicone polymer; and

(ii) an antioxidant present in an effective amount to inhibit degradation of said gelatin walls.

5,082,662

BONE DISORDER TREATMENT

Sebastian M. Laurent, Greenwell Springs, and Robert N. Sanders, Baton Rouge, both of La., assignors to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 304,222, Jan. 30, 1989, Pat. No. 4,970,080, which is a continuation-in-part of Ser. No. 801,596, Nov. 25, 1986, Pat. No. 4,847,085, which is a continuation-in-part of Ser. No. 741,572, Jun. 5, 1985, abandoned, which is a division of Ser. No. 475,370, Mar. 14, 1983, Pat. No. 4,556,564. This application Oct. 17, 1990, Ser. No. 599,292

Int. Cl.[5] A61K *33/06, 33/12;* A23K *1/00*

U.S. Cl. 424—442 38 Claims

1. A method of inhibiting and/or preventing calcium deficiency bone disorders in animals, wherein a small effective amount of a zeolite is fed to the animal in order to raise the calcium content of the bones of the animal.

11. A method of decreasing liver fat in animals wherein a small amount of zeolite is fed to the animal.

26. A method of decreasing the blood cholesterol in animals wherein a small amount of zeolite is fed to the animal.

5,082,663

EXTERNAL ADHESIVE PREPARATION CONTAINING STEROIDS

Ryoji Konishi; Akihito Oji; Toshikuni Kawaji; Osami Makaya; Manabu Ishihara, all of Kagawa, and Akira Iwasa, Yotsukaido, all of Japan, assignors to Teikoku Seiyaky Co., Ltd., Toyko, Japan and SS Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP87/00618, § 371 Date Apr. 20, 1988, § 102(e) Date Apr. 20, 1988, PCT Pub. No. WO88/01170, PCT Pub. Date Feb. 25, 1988

Continuation of Ser. No. 189,313, Apr. 20, 1988, abandoned. This PCT application Aug. 20, 1987, Ser. No. 639,758

Claims priority, application Japan, Aug. 20, 1986, 64-195935; Aug. 20, 1986, 64-195936

Int. Cl.[5] A61L *15/16, 15/22;* A61K *31/56, 31/74*

U.S. Cl. 424—445 7 Claims

1. An external adhesive preparation for the treatment of skin diseases which consists of an effective amount of a steroid in admixture with an adhesive gel base consisting essentially of a water-soluble high molecular weight compound, water, and a water-retaining agent,

wherein said water-soluble high molecular weight compound is carboxymethylcellulose, methyl cellulose, polyvinyl alcohol, polyacrylic acid, therapeutically effective metal salts thereof, or a combination or two or more thereof, which is contained in an amount of 0.1 to 30 w/w % in the adhesive gel base,

said water-retaining agent being a polyhydric alcohol selected from the group consisting of glycerol, sorbitol,

propylene glycol and 1,3-butanediol, which is contained in an amount of 5 to 60 w/w % in an adhesive gel base, or said water-retaining agent having a highly absorptive high molecular weight compound selected from the group consisting of starch - acrylonitrile graft copolymer, starch-acrylic acid graft copolymer, cross-linked product of polyvinyl alcohol, cross-linked product of carboxymethylcellulose, and cross-linked product of polyacrylate, which is contained in an amount of 0.01 to 10.0 w/w % in the adhesive gel base, and

said water being contained in an amount of 20 to 50 w/w % in the adhesive gel base.

5,082,664

PROSTAGLANDIN-LIPID FORMULATIONS

Robert P. Lenk, Lambertville, N.J.; Michelle L. Tomsho, Levittown, Pa.; Robert L. Suddith, Robbinsville, and Robert J. Klimchak, Flemington, both of N.J., assignors to The Liposome Company, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 53,305, May 22, 1987, abandoned. This application May 18, 1988, Ser. No. 195,228

Int. Cl.[5] A61K *37/22*

U.S. Cl. 424—450 **51 Claims**

1. A liposome composition comprising an arachidonic acid metabolite, a lipid, and a drying-protectant, and wherein the liposomes contain a partition-enhancing buffer.

5,082,665

ANTI-SNORING FORMULATIONS USING YOHIMBINE

Tom Verny, 36 Madison Ave., Toronto, Ontario, Canada M5R 2S1 , assignor to Tom Verny, Toronto and Ivor M. Hughes, Markham, both of, Canada

Filed Mar. 15, 1990, Ser. No. 493,763

Int. Cl.[5] A61K *31/40, 9/20*

U.S. Cl. 424—464 **2 Claims**

1. An improved treatment for a person who snores, the treatment comprises the administration prior to sleep to the patient of an effective amount of yohimbine or any pharmaceutically tolerable form thereof in a pharmaceutically tolerable carrier to inhibit snoring in persons who snore.

5,082,666

PROCESS FOR PREPARING SOLUBLE AND/OR SPLITABLE TABLETS AND TABLETS THUS OBTAINED

Michel Rene, Paris, and Jean-Claude Plantefeve, Vernouille, both of France, assignors to Laboratoires Beaufour, France

Continuation of Ser. No. 103,175, Sep. 30, 1987, abandoned. This application Nov. 22, 1989, Ser. No. 441,185

Claims priority, application United Kingdom, Oct. 14, 1986, 8624628

Int. Cl.[5] A61K *9/44*

U.S. Cl. 424—467 **3 Claims**

1. A process for the preparation of tablets from a mixture of components which are readily soluble and/or splitable in water comprising selecting a volatile liquid agent having a boiling point between −35° C. and +50° C., said agent being a halogenated hydrocarbon or a mixture of halogenated hydrocarbons, said agent being insoluble or poorly soluble in said components, and said agent not reacting with or being firmly absorbed by said components, introducing said agent into the preparation ready to be pressed or moulded in an amount sufficient to make a tablet which is readily soluble, splitable, or both, thereafter proceeding with the moulding or compressing step and, finally, after the moulding or compressing step, eliminating the volatile liquid agent either slowly at room temperature or by gentle warming or by lowering the pressure or by both gentle warming and lowering of the pressure.

5,082,667

SOLID PHARMACEUTICAL DOSAGE IN TABLET TRITURATE FORM AND METHOD OF PRODUCING SAME

Kurt G. Van Scoik, Grayslake, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 352,799, May 18, 1989, abandoned, which is a continuation-in-part of Ser. No. 203,396, Jun. 7, 1988, abandoned. This application Apr. 22, 1991, Ser. No. 689,120

Int. Cl.[5] A61K *9/26*

U.S. Cl. 424—469 **21 Claims**

1. A solid pharmaceutical dosage in tablet triturate form which rapidly dissolves upon oral administration, said tablet comprising a tablet matrix comprising a water-soluble but ethanol-insoluble carbohydrate wherein the carbohydrate is a monosaccharide, a dissaccharide or a combination thereof, said tablet also comprising discrete particles of a solid, water-soluble but triglyceride-insoluble active ingredient, said particles having a triglyceride coating which is insoluble in water, ethanol, saliva or combinations thereof wherein the triglyceride is a triester of glycerol wherein the esters are derived from fatty acids independently selected from fatty acids having at least 16 carbon atoms, said triglyceride-coated particles of active ingredient comprising from about 50% to about 80% by weight of triglyceride, and wherein the weight ratio of carbohydrate to discrete particles of triglyceride-coated active ingredient is from about 4:1 to about 100:1 and wherein said triglyceride-coated particles are distributed throughout the tablet matrix.

5,082,668

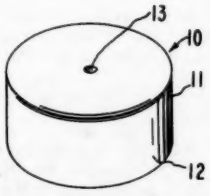
CONTROLLED-RELEASE SYSTEM WITH CONSTANT PUSHING SOURCE

Patrick S. L. Wong, Palo Alto; Brian L. Barclay, Sunnyvale; Joseph C. Deters, and Felix Theeuwes, both of Los Altos, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 212,552, Jun. 28, 1988, which is a continuation-in-part of Ser. No. 912,712, Sep. 29, 1986, Pat. No. 4,783,337, which is a continuation-in-part of Ser. No. 685,687, Dec. 24, 1984, abandoned, which is a continuation-in-part of Ser. No. 493,760, May 11, 1983, abandoned. This application Oct. 9, 1990, Ser. No. 595,140

Int. Cl.[5] A61K *9/22*

U.S. Cl. 424—473 **3 Claims**



1. An improvement in a device for delivering a beneficial agent composition to a fluid environment of use, wherein the device comprises:

(a) a wall comprising a composition that is permeable to the passage of fluid and is substantially impermeable to the passage of agent, which wall surrounds and forms;

(b) a compartment, and wherein the improvement comprises;

(c) a beneficial agent composition comprising a beneficial agent and 10% to 90% of an osmopolymer in the compartment, which beneficial agent composition is delivered substantially as a ribbon, at a rate expressed by

$$\frac{dm}{dt} = \left(\frac{dV}{dt}\right)_t \cdot C_D \text{ wherein } \frac{dm}{dt}$$

is the does of beneficial agent delivered in unit time,

$$\left(\frac{dV}{dt}\right)_t$$

is the total volume of the agent composition delivered in unit time, and C_D is the amount of beneficial agent mixed with the osmopolymer composition delivered from the device;

(d) a push composition in contact with the beneficial agent composition in the compartment, which push composition, in the presence of fluid that enters the device, increases in dimension and pushes the beneficial agent composition from the device; and,

(e) exit means in the wall for delivering the beneficial agent composition from the device, at a controlled rate over time.

5,082,669

RAPID-RELEASING ORAL PARTICLE PHARMACEUTICAL PREPARATION WITH UNPLEASANT TASTE MASKED

Yoshimi Shirai, Ikeda; Kiyomi Sogo, Osaka; Yoshihiko Nakamura, Takarazuka; Hiroshi Fujioka, Ibaraki, and Hirokazu Makita, Nara, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jul. 18, 1990, Ser. No. 553,960

Claims priority, application Japan, Jul. 20, 1989, 1-190009

Int. Cl.[5] A61K *9/14*

U.S. Cl. 424—495 **22 Claims**

1. A rapid-releasing oral particle pharmaceutical preparation comprising a plurality of particles, each of said particles comprising a core and a film layer coating said core, said core comprising a drug having a taste for which masking is desired and a water-swelling agent, said film layer comprising ethylcellulose and a water-soluble substance, said water-soluble substance being selected from the group consisting of hydroxypropylmethylcellulose, hydroxypropylcellulose, methylcellulose, and polyvinylpyrrolidone, the amount of said drug in said core being at most 40% by weight based upon the weight of said particle, the amount of said water-swelling agent being about 35% to about 70% by weight based upon the weight of said particle, the amount of ethylcellulose in said film layer being about 3 to about 11% by weight based upon the weight of said particle, the amount of said water-soluble substance being about 0.1 to about 0.8 times the weight of ethylcellulose, said core accounting for about 75–95% by weight of said particle,

and wherein said preparation has the following properties:

(1) the length of time during which a preparation containing 50 mg of said drug kept in a mouth cannot be tasted is at least 20 seconds,

(2) the dissolution rate of a preparation containing 50 mg of said drug is at least 50% after 10 minutes (D_{10}min) and at least 80% after 30 minutes (D_{30}min) according to the Paddle method.

5,082,670

METHOD OF GRAFTING GENETICALLY MODIFIED CELLS TO TREAT DEFECTS, DISEASE OR DAMAGE OR THE CENTRAL NERVOUS SYSTEM

Fred H. Gage, La Jolla; Michael B. Rosenberg, San Diego, and Theodore Friedmann, La Jolla, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Dec. 15, 1988, Ser. No. 285,196

Int. Cl.[5] A61K *35/00, 48/00;* **C12N** *15/00*

U.S. Cl. 424—520 **27 Claims**

1. A method for treating defective, diseased or damaged cells in the mammalian central nervous system comprising grafting donor cell from the same mammalian species into the central nervous system, said donor cells genetically modified to produce a functional molecule in a sufficient amount to ameliorate said defective, diseased or damaged cells in the central nervous system.

5,082,671

LOW MOISTURE SUCRALOSE SWEETENED CHEWING GUM

Subraman R. Cherukuri, Towaco, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 427,663, Oct. 27, 1989. This application Dec. 19, 1990, Ser. No. 630,096

Int. Cl.[5] A23G *3/30*

U.S. Cl. 426—3 **26 Claims**

1. A low moisture sucralose sweetened chewing gum composition having a moisture content below about 2% by weight of the final composition, which comprises:

a chewing gum base present in an amount of from about 5% to about 85%, by weight, sucralose in an amount of from about 0.05% to about 0.5% by weight and a bulking agent comprising at least one bulk sweetener and a viscous liquid, comprising corn syrup, fructose syrup and mixtures thereof, wherein said sucralose releases from said gum composition at a rate of 15 to 50 sucrose equivalents per minute within the initial 30 seconds of chewing said chewing gum composition and at a rate of more than 6 sucrose equivalents per minute at about 5 minutes of chewing.

5,082,672

ENZYMATIC DEAMIDATION OF FOOD PROTEINS FOR IMPROVED FOOD USE

Jamel S. Hamada, Metairie, and Wayne E. Marshall, Slidell, both of La., assignors to The United States of American as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 21, 1989, Ser. No. 369,587

Int. Cl.[5] A23L *1/00*

U.S. Cl. 426—7 **5 Claims**

1. A method of treating food proteins to enhance solubility, emulsifying and foaming properties consisting essentially of:

a) denaturing a food protein to form a denatured protein;

b) hydrolyzing said denatured protein; and

c) deamidating by treatment with peptidoglutaminase.

5,082,673

METHOD OF MAKING SOLUBLE DIETARY FIBER COMPOSITIONS FROM CEREALS

George E. Inglett, Peoria, Ill., assignor to The United States of America, as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 373,978, Jun. 30, 1989, Pat. No. 4,996,063. This application Dec. 5, 1990, Ser. No. 622,590

The portion of the term of this patent subsequent to Feb. 26, 2008, has been disclaimed.

Int. Cl.[5] A23L *1/105*

U.S. Cl. 426—21 **14 Claims**

1. A method for producing a composition comprising water-soluble dietary fiber and maltodextrins comprising the steps of:

a. treating an aqueous dispersion of a gelatinized, milled,

cereal substrate with an α-amylase under conditions which will hydrolyze the substrate starch without appreciable solubilization of the substrate protein and thereby yield a soluble fraction and an insoluble fraction;

b. separating said soluble fraction from said insoluble fraction under conditions which minimize the level of protein in the soluble fraction; and

c. recovering from said soluble fraction said water-soluble dietary fiber substantially free of water-insoluble fiber.

5,082,674

FOOD PRODUCT

Rebecca S. Carrell, Cambridge, Great Britain; Wietse van Dijk, Klaaswaal, Netherlands; Mervyn R. Goddard, Rushden, Great Britain, and John B. Hayes, Den Haag, Netherlands, assignors to Thomas J. Lipton Co., Division of Conopco, Inc., Englewood Cliffs, N.J.

Filed Sep. 19, 1990, Ser. No. 585,855

Claims priority, application Netherlands, Sep. 29, 1989, 8902419; United Kingdom, Apr. 19, 1990, 9008755

Int. Cl.[5] A23B *7/10*

U.S. Cl. 426—52 **6 Claims**

1. A process for the manufacture of a lyso-phospholipoprotein (LPLP)-comprising, dried particulate foodstuff, which comprises incorporating into the foodstuff from 0.1% to 90% by weight of the foodstuff of dried LPLP or dried LPLP-comprising material, obtained by:

(a) treating phospholipoprotein (PLP) or PLP-comprising material with phospholipase A such that the percentage of converted phosphatidylcholine plus phosphatidylethanolamine based on the total amount of phosphatidylcholine plus phosphatidylethanolamine present before conversion is at least 10% and spray-drying the thus treated material at an air inlet temperature of from 200° C. to 240° C. and an air inlet temperature of from 75° C. to 95° C., so as to reach a final moisture temperature of at most 10% by weight.

5,082,675

ENSILING COMPOSITION

David A. Jackson, Hull; Edward McGee, Potters Bar, and David A. Parker, Norther Humberside, all of England, assignors to BP Chemicals Limited, London, England

Filed Jul. 23, 1990, Ser. No. 557,398

Claims priority, application United Kingdom, Jul. 29, 1989, 8917384; Dec. 7, 1989, 8927678

Int. Cl.[5] A23K *1/22*

U.S. Cl. 426—54 **15 Claims**

1. An aqueous composition suitable for use as an ensiling agent consisting essentially of a combination of formic acid and octanoic acid, said composition being present in an amount effective to produce silage enhanced in residual sugars, reduced in lactic acid and without a substantial adverse effect on digestibility.

5,082,676

COFFEE CASSETTE

Graham Love; Karl Schellhaass; Bärbel Rathjen, all of Bremen, and Jürgen Schwarz, Bremerhaven, all of Fed. Rep. of Germany, assignors to Hag Gf Aktiengesellschaft, Bremen, Fed. Rep. of Germany

Continuation of Ser. No. 351,735, May 15, 1989, abandoned. This application Jan. 25, 1991, Ser. No. 649,205

Int. Cl.[5] B65D *85/00;* **B65B** *29/02;* **A47J** *31/00*

U.S. Cl. 426—79 **15 Claims**

1. A cassette for flavoring a liquid and for use with a liquid receptacle, said cassette comprising:

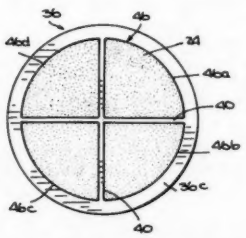
(a) a uniform height, impervious frame having an apertured center section;

(b) said center section including a plurality of ribs extending the height of said frame and connected to and extending across said frame and separating said center section into a plurality of at least three separate sections;

(c) said separate sections containing individual quantities of roast and ground coffee particles with the particles distributed in a manner such that each of the sections are not completely filled with said particles;

(d) a bottom filter and a top filter secured to the frame and extending across the bottom and the top of the frame to hold said roast and ground coffee particles therein;

said cassette having been treated by placing said roast and ground coffee containing cassette, with each section not completely filled with said particles, in a small envelope or packet and having most or all of the air withdrawn by



vacuum from the cassette containing envelope or packet during a vacuum sealing of the envelope or packet such that the roast and ground coffee particles in each of said sections are no longer uniformly distributed over the area of each section but are reshaped and formed into a generally triangular, firm conglomerate in each of said sections and exhibit slightly higher concentrations of said particles toward the center of each of said sections and slightly lower concentration of said particles toward the periphery of each of said sections, such that when the cassette is removed from the envelope or packet and used to make a beverage, the flow rate of liquid through the cassette is increased relative to a cassette not previously vacuum packed.

5,082,677

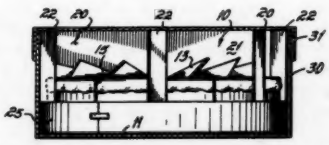
PACKAGING MEANS AND METHOD FOR SHIPPING PASTRIES

Avi Bear, 6390 May St., Cincinnati, Ohio 45243

Filed Jul. 19, 1990, Ser. No. 554,390

Int. Cl.[5] A21D *15/00*

U.S. Cl. 426—124 **21 Claims**



1. A decorated whole pastry packaged in a container,

said pastry having a series of cuts forming slices,

dividers inserted downwardly into the cuts between slices, each divider comprising a slip of flexible sheet material having a fold between opposite leaves, the fold being at the bottom of the respective cut, said leaves engaging the cut faces of adjacent slices,

supports inserted in dividers in at least some of the cuts, each support comprising a flat, stiff element between the leaves of the respective divider, the support resting on the fold of the divider,

said supports being higher than said pastry and projecting above the top thereof,

each said support having an upright end flap which is folded

about a vertical axis outside of said pastry and spaced from said end flaps of adjacent supports,

each said end flap projecting from said divider approximately parallel to the side of said pastry,

said pastry being in a container having a bottom, a side wall, and a top,

said supports substantially engaging the underside of the top of said container,

friction between the slices and said dividers resisting movement of the slices relative to said dividers,

said dividers and supports holding the pastry upwardly against damage in said container if said container is inverted.

5,082,678

FAT REMOVAL FROM MEAT PATTIES

Geoffrey Margolis, 12229 Falkirk La., Los Angeles, Calif. 90049

Continuation of Ser. No. 224,449, Jul. 25, 1988, abandoned. This application Oct. 30, 1989, Ser. No. 430,088

Int. Cl.[5] A23L *1/317, 1/318*

U.S. Cl. 426—281 **18 Claims**

1. A method for removing fat from a preformed, ground meat patty such that after processing, the patty has a hamburger-like structure and texture, comprising the steps of:

(a) heating the meat patty on both sides to a temperature sufficient to liquefy a portion of the fat contained in the patty, and to cause partial but not complete denaturization of both sides of the patty;

(b) applying pressure to the heated meat patty (i) only after a portion of the fat contained in the patty has been liquified during said heating step, (ii) only after the patty has been partially denatured on both sides, and (iii) while the fat portion remains liquified, the pressure being sufficient such that after processing at least about 40% by weight of the fat initially contained in the patty is removed therefrom, but low enough such that a hamburger-like structure and texture is achieved; and

(c) removing the liquified fat from the immediate vicinity of the patty by carrying out pressure step (b) while the patty is on a support surface constructed to promote the flow of liquified fat out of and away from the patty.

5,082,679

METHOD FOR DETOXIFYING FOODSTUFFS

Russell R. Chapman, Mesa, Ariz., assignor to Aflatoxin Limited Partnership, Cave Creek, Ariz.

Continuation of Ser. No. 424,764, Oct. 20, 1989, abandoned. This application Jan. 25, 1991, Ser. No. 649,214

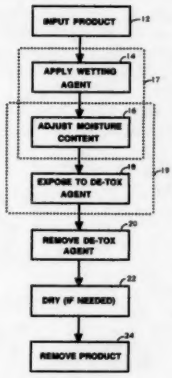
Int. Cl.[5] A23B *9/18*

U.S. Cl. 426—312 **19 Claims**

1. A process for decontaminating agricultural products contaminated with aflatoxins or the like, comprising:

providing the contaminated product;

exposing the contaminated product to a wetting agent comprising a mixture of water and a soap, detergent or combination thereof;



thereafter heating the product by exothermic reaction of anhydrous ammonia gas with the wetting agent treated product.

5,082,680

PROCESS FOR REMOVING BRAN LAYERS FROM WHEAT KERNELS

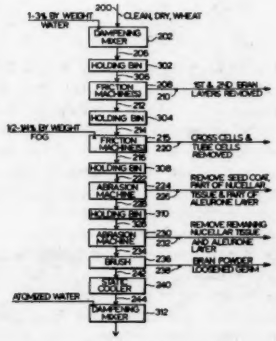
Joseph J. Tkac, Port Colborne, Canada, assignor to Tkac & Timm Enterprises, Limited, Port Colborne, Canada

Division of Ser. No. 286,374, Dec. 19, 1988, which is a continuation-in-part of Ser. No. 64,067, Jun. 18, 1987. This application Dec. 14, 1990, Ser. No. 627,238

Claims priority, application Canada, Dec. 16, 1988, 586260

Int. Cl.[5] A23P *1/00*

U.S. Cl. 426—483 **21 Claims**



1. A process for treating wheat kernels having an endosperm and germ encased in a layered bran coat comprising processing the wheat kernels to substantially remove the exposed bran coat by moistening the wheat kernels with about 1 to 3% by weight water to condition the outer layers of bran coat without fusing the layers together, then within one to about five minutes after application of the water, feeding said kernels in a continuous stream through friction operations to substantially remove and separate the outer four bran layers and then feeding the kernels in a continuous stream through abrasion operations to remove and separate the inner bran layers while maintaining the endosperm essentially integral.

5,082,681

METHOD AND APPARATUS FOR PRODUCING MOULDED CHEESE BLOCKS

Peter B. Barlow, Norton-Sub-Hamdon, United Kingdom, and Ole M. Christiansen, 73 Malmo, Sweden, assignors to Alfa-Laval Cheese Systems Limited, Somerset, United Kingdom

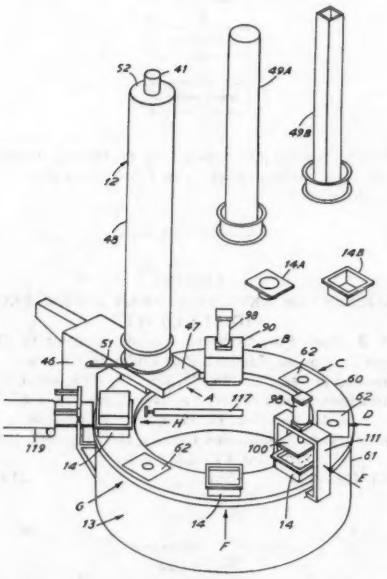
PCT No. PCT/GB89/00326, § 371 Date Oct. 1, 1990, § 102(e) Date Oct. 1, 1990, PCT Pub. No. WO89/08978, PCT Pub. Date Oct. 5, 1989

PCT Filed Mar. 30, 1989, Ser. No. 576,508

Claims priority, application United Kingdom, Mar. 31, 1988, 8807761

Int. Cl.[5] A23C *19/00*

U.S. Cl. 426—495 **44 Claims**



25. A method of forming a block of cheese from prepared cheese curd, said method comprising the steps of:

feeding the prepared curd into a tubular perforated column so as to build up a pillar of curd in the column with the curd being fed onto the top of the pillar, the curd in the lower portion of the pillar being compressed by the weight of superimposed curd to press out whey therefrom through the perforations in the column;

extracting air and whey from the column so as to maintain a sub-atmospheric pressure therein during the feeding of the curd into the column;

severing the lower end of the pillar of curd;

depositing the mass of curd severed from the pillar into a cheese mould below the column;

moving the mould into a plurality of pressing stations in succession;

compressing the mass of curd in the mould at each of the pressing stations at a pressure of at least 4 bar, said mass of curd in the mould being successively compressed for sufficient time to consolidate the mass of curd into a block of cheese with a rind firm enough to permit handling of the block of cheese after ejection from the mould;

moving the mould into an unloading station at which the block of cheese is ejected from the mould; and

returning the mould directly to a loading station below the column for receiption of another mass of curd.

5,082,682

NONFAT FROZEN DAIRY DESSERT WITH METHOD AND PREMIX THEREFOR

Benjamin R. Peterson, West Chicago, Ill., assignor to Fantasy Flavors, Inc., Carol Stream, Ill.

Filed Nov. 9, 1990, Ser. No. 611,233

Int. Cl.[5] A23G *9/00*

U.S. Cl. 426—564 **41 Claims**

1. A nonfat aerated dairy dessert produced from a liquid composition, said liquid composition comprising:

at least about 9 weight percent milk solids nonfat;

at least about 62 weight percent water;

a sweetener;

between about 2 and about 6 weight percent starch hydrolysate selected from the group comprising dextrins, maltodextrins, low conversion corn syrup, and mixtures thereof;

between about 0.25 and about 1.25 weight percent egg albumen;

between about 0.08 and about 0.42 weight percent stabilizer; and

between about 0.05 and about 0.45 weight percent emulsifier.

5,082,683

AMIDE/AMINE ESTER DERIVATIVES AS LOW CALORIE FAT MIMETICS

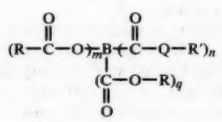
Ronald G. Yarger, Covent Station; Lawrence P. Klemann, Somerville, and John W. Finley, Whippany, all of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Aug. 1, 1990, Ser. No. 562,109

Int. Cl.[5] A23D *9/00*

U.S. Cl. 426—601 **19 Claims**

1. An edible composition comprising in addition to other edible ingredients, a fat mimetic of the formula:



where

B is an aliphatic group having 2 to 6 carbons,

each R is independently, an aliphatic group having 1 to 23 carbons,

Q is —N(R')— or —O—$(CH_2)_p$-N(R')—,

R' is —H, —R or —(CO)—R, independently,

m=0 to 3,

n=1 to 3,

p=2 to 4, and

q=0 to 3.

5,082,684

LOW-CALORIE FAT SUBSTITUTE

Fu-Ning Fung, Salem, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Feb. 5, 1990, Ser. No. 475,576

Int. Cl.[5] A23D *7/00, 7/02*

U.S. Cl. 426—602 **65 Claims**

1. A two phase emulsion useful as a low calorie fat substitute comprising:

(a) from about 1 to about 95 pecent of a single aqueous phase rendered non-flowable by the addition of an effective amount of a gel-forming composition, and

(b) from about 5 to about 99 percent of an oil phase comprising a solid or semi-solid fat or oil and an emulsifier wherein the interaction between said non-flowable aqueous phase and said oil phase results in said two phase emulsion being pourable.

5,082,685

METHOD OF CONDUCTING PLASMA TREATMENT

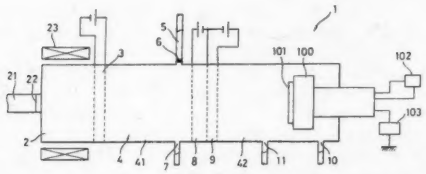
Hisao Morooka, Yachiyo, Japan, assignor to TDK Corporation, Tokyo, Japan

Filed Jul. 19, 1990, Ser. No. 554,460

Claims priority, application Japan, Jul. 24, 1989, 1-191181; Nov. 20, 1989, 1-301139

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—38 21 Claims



1. A method for conducting plasma treatment using a plasma treating apparatus, comprising the steps of:

creating a plasma in a plasma creating chamber having means for creating a plasma therein, said plasma creating chamber being in communication with a treating chamber via an electron accelerator electrode,

drawing a flow of electrons from the plasma into said treating chamber with the electron accelerator electrode,

introducing a reaction gas into said treating chamber through directive means comprising a thin plate having a plurality of through holes formed therein, thereby forming a high density region of the reaction gas having an apex at the plurality of through holes and that extends in a layer substantially perpendicular to said electron flow in said treating chamber, whereby the reaction gas is activated by collision with electrons of said electron flow to form a high density plasma region; and

conducting plasma treatment on an object in the treating chamber.

5,082,686

UV CURABLE NON-TOXIC EPOXYSILICONE RELEASE COATING COMPOSITIONS AND METHOD

James L. Desorcie, and Michael J. O'Brien, both of Clifton Park, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 369,798, Jun. 22, 1989, Pat. No. 5,010,118. This application Dec. 3, 1990, Ser. No. 620,992

Int. Cl.[5] B05D *3/06;* C08F *2/46;* C08J *3/28*

U.S. Cl. 427—54.1 7 Claims

1. A method for providing nontoxic, adherent silicone release coatings which can be used in food applications comprising:

(1) applying a UV curable silicone coating onto a substrate, and

(2) exposing the treated substrate of (1) to UV radiation until the UV curable silicone coating is tack-free, where the UV curable epoxy silicone composition comprises by weight

(A) 100 parts of epoxysilicone having from 5 to 12 mole percent epoxysiloxy units, based on the total moles of condensed diorganosiloxy units in the epoxysilicone,

(B) 1 to 25 parts of a compatibilizer in the form of a mixture of

(i) 1 to 25 parts of a C_{6-20}) alkylphenol and

(ii) 0 to 15 parts of a (C_{4-12}) alkanediol, and

(C) an effective amount of a polyarylonium hexafluorometal, or metalloid salt, substituted with at least one nuclear bound alkoxy radical having at least 8 carbon atoms selected from the class consisting of diaryliodonium salts and triarylsulfonium salts and the UV curable epoxy silicone composition is a mixture prepared by initially forming a solution of the arylonium salt in the alkylphenol and alkane diol and thereafter blending the resulting solution into the epoxy silicone.

5,082,687

PROCESS FOR PRODUCING ORGANIC ELECTRICAL CONDUCTOR

Yoshinobu Ueba; Takayuki Mishima, both of Osaka, and Gunzi Saito, Kanagawa, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 8, 1990, Ser. No. 462,364

Claims priority, application Japan, Jan. 7, 1989, 1-1451; May 15, 1989, 1-122608

Int. Cl.[5] B05D *5/12;* C30B *29/54*

U.S. Cl. 427—62 6 Claims

1. A process for producing an organic electrical conductor comprising the steps of:

(1) dissolving or dispersing an electron-donating material and an electron-accepting material in a solvent containing an alcohol; and

(2) forming and growing crystals of said organic electrical conductor by subjecting said dissolved or dispersed materials of step (1) to electrochemical oxidation-reduction.

5,082,688

PROCESSES OF FORMING AG DOPED CONDUCTIVE CRYSTALLINE BISMUTH MIXED ALKALINE EARTH COPPER OXIDE FILMS

John A. Agostinelli; Liang-sun Hung, both of Rochester, and Jose M. Mir, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 4, 1989, Ser. No. 347,607

Int. Cl.[5] B05D *5/12, 3/02*

U.S. Cl. 427—126.3 10 Claims

1. A process of forming on a substrate a conductive film containing grains of crystalline bismuth mixed alkaline earth copper oxide comprising

depositing a bismuth mixed alkaline earth copper oxide on the substrate and

sintering at least a portion of the bismuth mixed alkaline earth copper oxide to form a conductive crystalline grain structure,

characterized in that silver is incorporated in the bismuth mixed alkaline earth copper oxide as a grain growth promoting agent prior to sintering.

5,082,689

PRODUCTION OF MAGNETIC RECORDING MEDIA

Ludwig Kreitner, Heppenheim; Werner Grau, Bobenheim-Roxheim; August Lehner, Roedersheim-Gronau; Hans Reichert, Oberkirch; Friedrich Sommermann, Kehl; Norbert Schneider, Altrip, and Gerd Erhardt, Kehl, all of Fed. Rep. of Germany, assignors to Basf Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 23, 1990, Ser. No. 571,229

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1989, 3929166

Int. Cl.[5] B05D *5/12*

U.S. Cl. 427—128 6 Claims

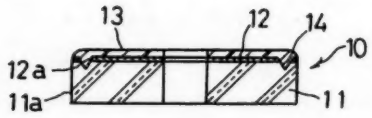
1. In a process for the production of a magnetic recording medium wherein a dispersion of anisotropic magnetic material in an organic binder is applied in the form of a layer onto a non-magnetic substrate and the applied magnetic layer is solidified, the improvement which comprises: preparing the dispersion by stirring the magnetic material and binder along with a dispersant with an anchor stirrer or a helical stirrer at from 50 to 1000 revolutions per minute in a closed cylindrical grinding chamber having a ratio of length to diameter of from 1.3:1 to 2.5:1, said chamber containing spherical grinding media having a lower specific gravity than the magnetic material in the chamber and having a diameter of from 0.5 to 3 mm.

5,082,690

PROCESS FOR MANUFACTURING A MAGNETO-OPTIC DISC

Tomoyuki Miyake, Tenri; Hiroyuki Katayama, Nara; Junichiro Nakayama, Shiki; Yoshiteru Murakami, Nishinomiya, and Kenji Ohta, Kitakatsuragi, all of Japan, assignors to Sharp Corporation, Osaka, Japan

Filed May 15, 1990, Ser. No. 523,756
Claims priority, application Japan, May 15, 1989, 1-121816
Int. Cl.[5] B05D 5/12
U.S. Cl. 427—130 9 Claims



1. A process for manufacturing a magneto-optic disc comprising at least a transparent substrate, a magneto-optic recording film, and a protecting film made of resin for protecting the magneto-optic recording film, comprising the steps of forming the magneto-optic recording film over the entire one side surface of the transparent substrate; providing in a portion adjacent to the peripheral edge of the magneto-optic recording film an annular groove extending in depth through the magneto-optic recording film to the transparent substrate; and forming the protecting film over the surfaces of the magneto-optic recording film and the annular groove.

5,082,691

SCRATCH REMOVAL FOR PLASTIC LENSES

Richard L. Levy, 74 Deer Creek Rd., Pittsford, N.Y. 14534

Filed Aug. 28, 1990, Ser. No. 573,796
Int. Cl.[5] B05D 35/00
U.S. Cl. 427—140 2 Claims

1. A method of removing scratches and abrasions from the surface of a plastic lens which comprises:

(a) providing a plastic lens which has one or more surface scratches or abrasions;

(b) applying a wax composition which contains a carbon black pigment to the surface of the lens resulting in the formation of a coating on at least the abraded and scratched portions of said surface; and

(c) removing said wax coating, except for the wax which remains in the scratches or abrasions by wiping it from said surface, whereby said surface is rendered substantially more tolerable to the user.

5,082,692

METHOD FOR THE TOUCH UP OF SCRATCHED PAINTED METAL PRODUCTS

David Cavill, P.O. Box 553, Ozona, Fla. 34660

Filed Jul. 23, 1990, Ser. No. 556,774
The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.
Int. Cl.[5] B05D 3/12
U.S. Cl. 427—142 5 Claims

1. A method for touching-up a marred, painted metal surface from which a chip of paint is missing, marring the appearance of the painted surface, the method comprising applying touch-up paint to the marred surface, permitting the paint to rest upon the surface for at least about five minutes until the paint is partially set, while the paint is partially set gently rubbing a soft cloth, wetted with a touch-up solvent composition, over the partially set touched up painted surface and the immediately adjoining unmarred areas to remove any touch-up paint applied over the painted unmarred areas, and then permitting the touch-up paint to completely dry, the touch-up solvent composition comprising from about 5 to about 35 percent by weight of an active solvent for the touch-up paint, and a miscible diluent for the active solvent.

5,082,693

PRECURSORS FOR BORON NITRIDE CERAMIC COATINGS

Robert T. Paine, Jr., Albuquerque, N. Mex.; Chaitanya K. Narula, Dearborn, Mich., and Riley O. Schaeffer, Los Alamos, N. Mex., assignors to University of New Mexico, Albuquerque, N. Mex.

Division of Ser. No. 312,881, Feb. 17, 1989, Pat. No. 4,971,779.
This application Oct. 15, 1990, Ser. No. 598,371
Int. Cl.[5] B05D 3/02
U.S. Cl. 427—226 26 Claims

1. A process for the pyrolytic conversion of a polymeric precursor composition to boron nitride comprising the following steps:

(a) obtaining a B-aminoborazene compound having a general formula selected from the group consisting of $(ClB)_2(BNR_2)(NH)_3$, $(ClB)_2[BN(H)R](NH)_3$ and $(ClB)_2[BN(SiR_3)_2](NH)_3$ and wherein each R is a member selected from the group consisting of alkyl groups and aryl groups;

(b) dissolving the B-aminoborazene compound in a solvent in the presence of a cross-linking agent to form a polymeric gel by polymerization;

(c) applying said polymeric gel as a coating on a form;

(d) removing substantially all the solvent from said polymeric gel; and

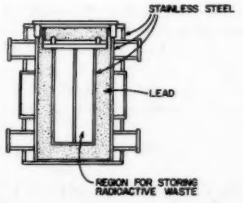
(e) converting the polymeric gel to boron nitride by pyrolysis.

5,082,694

METHOD FOR MANUFACTURING A VESSEL FOR STORING RADIOACTIVE WASTE

Yun S. Chang, Masan, and Dong J. Kim, Busan, both of Rep. of Korea, assignors to Korea Heavy Industries & Construction Co., Ltd., Changwon, Rep. of Korea

Filed Apr. 3, 1990, Ser. No. 503,882
Claims priority, application Rep. of Korea, Jan. 31, 1990, 90-1055
Int. Cl.[5] B05D 7/22
U.S. Cl. 427—239 1 Claim



1. A method for manufacturing a stainless steel vessel for storing radioactive waste comprising the steps of:

providing a stainless steel vessel having walls forming an innermost chamber for receiving radioactive waste, an outer chamber generally surrounding the innermost chamber, and a center space located between the innermost chamber and the outer chamber, the center space comprising walls having an inner surface constructed and arranged for adhesion with lead material to be placed in the center space for shielding the radioactive waste;

removing contaminants from the inner surface of the stainless steel vessel center space walls;

filling a copper plating solution into the stainless steel vessel center space simultaneously with stirring the solution;

maintaining the solution at a predetermined temperature in order to precipitate the copper contained in the solution,

thereby resulting in the copper plating onto the inner surface of the stainless steel vessel center space walls;
removing the copper plating solution from the stainless steel vessel center space; and
filling the center space with molten lead and solidifying the lead.

5,082,695

METHOD OF FABRICATING AN X-RAY EXPOSURE MASK

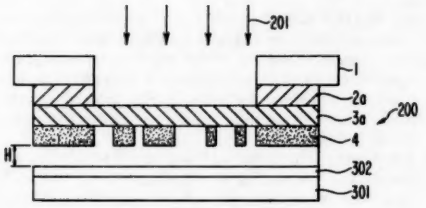
Masao Yamada, Yokohama; Masafumi Nakaishi, Inagi; Kenji Nakagawa, Isehara; Yuji Furumura, Kawasaki; Takashi Eshita, Inagi, and Fumitake Mieno, Kawasaki, all of Japan, assignors to 501 Fujitsu Limited, Kawasaki, Japan

Filed Feb. 24, 1989, Ser. No. 314,794

Claims priority, application Japan, Mar. 8, 1988, 63-54364; Mar. 8, 1988, 63-54365

Int. Cl.[5] C23C *16/32;* **G03F** *9/00*

U.S. Cl. 427—249 **11 Claims**



1. A method of fabricating an X-ray exposure mask including a substrate, said method comprising the steps of:
(a) forming a SiC membrane on the substrate;
(b) simultaneously doping the membrane with at least one of phosphorous, boron, nitrogen and oxygen; and
(c) selectively forming a pattern of an X-ray absorber material on the membrane.

5,082,696

METHOD OF FORMING SEMICONDUCTING AMORPHOUS SILICON FILMS FROM THE THERMAL DECOMPOSITION OF DIHALOSILANES

Kenneth G. Sharp, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 914,898, Oct. 3, 1986, abandoned. This application Dec. 31, 1987, Ser. No. 140,191

Int. Cl.[5] C23C *16/00, 16/46*

U.S. Cl. 427—255 **17 Claims**

1. A method of forming an amorphous polymeric silicon-containing film on a substrate which method comprises
placing a substrate in a deposition chamber;
evacuating air from the deposition chamber;
introducing a source gas at a pressure of 20 to 500 Torr into the deposition chamber, the source gas consisting essentially of dihalosilane or a mixture of dihalosilanes wherein each halogen of the dihalosilane or mixture of dihalosilanes is independently chosen from the group consisting of fluorine, chlorine, bromine, and iodine;
heating the substrate in the deposition chamber to a temperature of 400° to 600° C. to form, without glow or plasma discharge, an amorphous polymeric silicon-containing film on the substrate; and
removing the substrate from the deposition chamber.

5,082,697

POLYMER SALT COMPLEX FOR FIBER OR FABRIC TREATMENT

Robert T. Patton, Lake Jackson, Tex.; David M. Hall, Auburn, Ala., and Walter L. Vaughn, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 157,202, Feb. 17, 1988, abandoned. This application May 8, 1990, Ser. No. 520,489

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—340 **23 Claims**

1. A process for modifying a substrate comprising a fibrous material, or a paper, web, or fabric made of said fibrous material, said process consisting essentially of
applying to said substrate a dispersible form of a normally-solid polymer having pendent acid groups, the dispersible form being dispersed in a liquid carrier, and a reagent selected from the group consisting of
(a) tertiary amines or salts thereof,
(b) quaternary ammonium salts,
(c) primary amines or salts thereof, and
(d) secondary amines or salts thereof,
which reagent reacts with said dispersed polymer to render the polymer non-dispersible, and
drying to remove the liquid carrier.

5,082,698

AQUEOUS EPOXY RESIN COMPOSITIONS AND METAL SUBSTRATES COATED THEREWITH

Karl P. Anderson, Columbus, Ohio; Whaite M. Clark, Rancho Mirage, Calif.; Poli C. Yu, Wexford, Pa., and Richard T. Moyle, Pataskala, Ohio, assignors to Morton Coatings, Inc., Chicago, Ill.

Division of Ser. No. 165,529, Mar. 8, 1988, Pat. No. 5,001,173, which is a continuation-in-part of Ser. No. 48,281, May 11, 1987, abandoned. This application Oct. 29, 1990, Ser. No. 604,777

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—386 **48 Claims**

1. A method of improving the corrosion-resistant properties of metallic substrates comprising the steps of
(A) applying to the metallic substrate, an aqueous composition comprising:
(A-1) an organic resin component consisting essentially of at least one water-dispersible or emulsifiable epoxy resin or a mixture of resins containing more than 50% by weight of at least one water-dispersible or emulsifiable epoxy resin wherein the epoxy resins are the product of the condensation reaction of an epihalohydrin and an aliphatic or aromatic polyhydroxy compound, or a polycarboxylic acid;
(A-2) chromium trioxide in an amount to provide at least about 12 parts by weight of hexavalent chromium metal per 100 parts by weight of solid resin (A-1); and
(A-3) at least about 25% by weight of water;
said composition further characterized as being substantially free of strontium chromate, and
(B) heating the coated metallic substrate to a temperature of from about 150° F. to about 500° F. to provide the desired corrosion-resistant coating on the metallic substrate.

5,082,699

FLORAL BOTTLE DEVICE

Simcha Landau, 71 Garwood Rd., Fair Lawn, N.J. 07410

Filed Jan. 25, 1991, Ser. No. 645,906

Int. Cl.[5] A47G *7/06*

U.S. Cl. 428—23 **17 Claims**

1. A floral bottle device comprising:
a bottle having an axis and including an outer surface; and
at least one flower display means coaxially mounted on the bottle said flower display means extending in an annular ring outside of, but in contact with, the outer surface of said bottle, said bottle including an upper outer surface, the uppermost portion of said upper outer surface extend-

ing through and above said annular ring when said ring is in place on said bottle, such that flowers or other things placed in said annular ring can be circumferentially dis-

posed in an annular ring outside the outer surface of said bottle, said flower display means having interconnecting means for connecting the flower display means to the bottle.

5,082,700

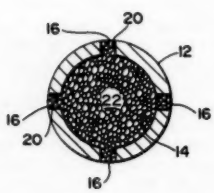
METHOD OF MAKING CERAMIC COMPOSITE ARTICLES AND ARTICLES MADE THEREBY

Ratnesh K. Dwivedi, Wilmington, Del., assignor to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 84,550, Aug. 10, 1987, Pat. No. 4,886,766. This application Oct. 30, 1989, Ser. No. 429,210

Int. Cl.[5] F16L *9/10, 9/19*

U.S. Cl. 428—34.4 **16 Claims**



1. A self-supporting ceramic composite body comprising a plurality of axially aligned, spaced apart cylindrical walls having a bounded cross-section forming a central bore and at least one longitudinal channel between said cylindrical walls, and connecting means for supporting said cylindrical walls in a spaced relationship, said connecting means being located between said cylindrical walls and said cylindrical walls and said connecting means comprising a polycrystalline ceramic matrix incorporating at least one filler material, said cylindrical walls and said connecting means inversely replicating in opposed directions the geometry of a shaped parent metal ingot disposed in at least one bedding of filler material upon evacuation of said parent metal from its initial location to form said cylindrical walls and said connecting means concurrently with the oxidation reaction of molten parent metal by migration of said molten parent metal from said initial location to form said polycrystalline ceramic matrix within said at least one bedding of filler material, said ceramic matrix comprising the oxidation reaction product of said parent metal and an oxidant.

5,082,701

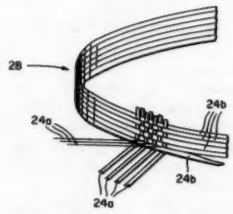
MULTI-DIRECTIONAL, LIGHT-WEIGHT, HIGH-STRENGTH INTERLACED MATERIAL AND METHOD OF MAKING THE MATERIAL

Paul t. Craven, North Scituate, and Richard A. Fisher, Providence, both of R.I., assignors to Quadrax Corporation, Providence, R.I.

Filed Dec. 9, 1987, Ser. No. 130,854

Int. Cl.[5] A47G *19/22*

U.S. Cl. 428—34.5 **36 Claims**



1. A circular-machine-interlaced material of multi-directional, light weight, high-strength construction, which comprises:

a plurality of 0 degree and 90 degree elongated flat ribbons interlaced in over-and-under symmetrical relationship with respect to a plane of the material, with the ribbons having sets of respective opposed engaged flat surface portions disposed in the plane of the material and the 90 degree ribbons extending at a slightly inclined angle to the 0 degree ribbons;

at least some of the elongated 0 degree and 90 degree ribbons having continuous fibers extending in only longitudinal directions in said at least some 0 degree and 90 degree ribbons, respectively; and

at least some of the 0 degree and 90 degree ribbons having been pre-impregnated with a matrix so that substantially all of the continuous fibers of the respective ribbons are encapsulated in the matrix and substantially the entire surface area of each of the opposed engaged flat surface portions of each set of said opposed engaged flat surface portions of the respective ribbons is coated with the matrix.

5,082,702

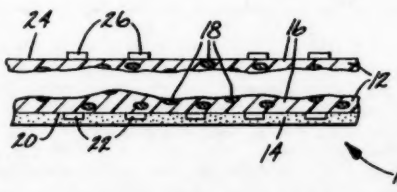
TAMPER-INDICATING TAPE

Todd D. Alband, Eagan, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 20, 1990, Ser. No. 569,825

Int. Cl.[5] B32B *7/10, 9/00;* **C09J** *7/02*

U.S. Cl. 428—36.92 **19 Claims**



1. A tamper-indicating tape for securing a first container part to a second container part to enclose an opening in the container consisting of:

(a) a light transmissive film derived from a composition comprising 50 to 85 parts by weight of a first copolymer comprising at least one moiety derived from at least one olefinic monomeric unit and 50 to 15 parts by weight of a second copolymer comprising at least one moiety derived

from at least one vinyl alcohol monomeric unit and said second copolymer being sufficiently incompatible with said first copolymer to form two phases within said film, one of said phases being continuous, said film having a first major surface and an opposing second major surface;

(b) first colored indicia printed on said first major surface of said film;

(c) second colored indicia printed on said second major surface of said film, said first indicia obscuring said second indicia sufficiently so that said second indicia are unreadable, prior to said tape's being subjected to tampering, and said second indicia obscuring said first indicia sufficiently so that said first indicia are unreadable prior to said tape's being subjected to tampering;

(d) means for adhering said film to the first and the second container parts with a bond strength greater than the splitting force of said film, said adhesive means being coated on at least one major surface of said film,

(e) whereby when said film is split, the film becomes opaque so that said first and second indicia are perceptible over said split opaque film to indicate separation of the container parts.

5,082,703

SIGN WITH TRANSPARENT SUBSTRATE

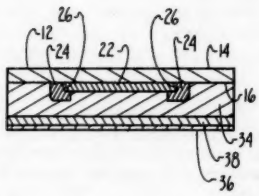
Lawrence J. Longobardi, 609 Melba, Encinitas, Calif. 92024

Continuation-in-part of Ser. No. 291,538, Dec. 28, 1988, Pat. No. 4,933,218. This application May 24, 1990, Ser. No. 528,701

The portion of the term of this patent subsequent to Jun. 12, 2007, has been disclaimed.

Int. Cl.[5] B44F *1/06*

U.S. Cl. 428—38 **30 Claims**



1. A sign which comprises:

a transparent substrate having a surface;

a layer of ink applied on said surface in a design having an edge;

an extraordinarily thick ridge of ink applied on said surface at the edge of said design; and

a stratum deposited on said surface and adhered thereto.

5,082,704

RELEASE FILM

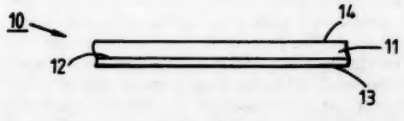
David E. Higgins, Whitby, England, assignor to Imperial Chemical Industries PLC, London, England

Filed May 8, 1989, Ser. No. 348,400

Claims priority, application United Kingdom, May 19, 1988, 8811868

Int. Cl.[5] A61F *13/02*; E04D *1/00*

U.S. Cl. 428—40 **9 Claims**



1. A release film comprising a self-supporting, polymeric film substrate having, on at least one surface thereof, a polymeric abherent layer characterised in that the abherent layer comprises a polyurethane resin which is the reaction product of:

(A) a prepolymer obtained by reacting:

(i) an organic polyisocyanate,

(ii) a polydialkylsiloxane having at least two isocyanate-reactive groups, and

(iii) a compound containing a hydrophilic centre and at least two isocyanate and/or isocyanate-reactive groups, and

(B) a polyfunctional chain extender.

5,082,705

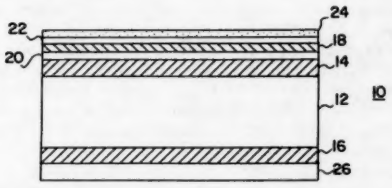
CARPET UNDERLAY

Robert J. Rose, Chesterfield, Va., assignor to E. R. Carpenter Company, Inc., Richmond, Va.

Filed Jul. 3, 1990, Ser. No. 547,072

Int. Cl.[5] B32B *7/12, 33/00*; D06N *7/00*

U.S. Cl. 428—40 **8 Claims**



1. A carpet underlay consisting essentially of

a) a resilient cushion layer having a solvent adhesive layer disposed on its upper and lower surfaces,

b) a scrim layer secured to the bottom surface of said cushion layer by said solvent adhesive layer on the bottom surface of said cushion layer,

c) a double adhesive coated film adhered along its undersurface to said solvent adhesive layer on the upper surface of said cushion layer, and

d) a release film removingly adhered to the upper surface of said double adhesive coated film.

5,082,706

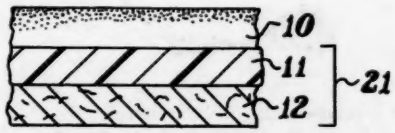
PRESSURE SENSITIVE ADHESIVE/RELEASE LINER LAMINATE

Thomas J. Tangney, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 23, 1988, Ser. No. 276,178

Int. Cl.[5] C09J *7/00, 143/04*

U.S. Cl. 428—40 **6 Claims**



1. As an article of manufacture a laminate comprising a layer of pressure sensitive adhesive and at least one liner adhered to at least a portion of said layer; said pressure sensitive adhesive being the reaction product of components comprising

(a) 30 to 70 weight parts of a polydiorganosiloxane having the general formula $R^1R_2SiO(R_2SiO)_nSiR_2R^1$ wherein each R is a monovalent hydrocarbon radical, each R_1 is an alkenyl radical and n is an integer,

(b) 70 to 30 weight parts of an organopolysiloxane which is

constituted of $R^2_3SiO_{1/2}$ units and SiO_2 units in a molar ratio in the range of $R^2_3SiO_{1/2}$ units and SiO_2 units in a molar ratio in the range of 0.6:1 to 0.9:1, wherein R^2 is selected from the group consisting of alkyl radicals, alkenyl radicals, and the hydroxyl radical, and methyl radicals comprise at least 95 mol percent of all R^2 radicals,

(c) an organohydrogenpolysiloxane free of aliphatic unsaturation having an average of at least 2 silicon-bonded hydrogen atoms in each molecule, in a quantity sufficient to provide from 1 to 40 silicon-bonded hydrogen atoms per alkenyl radical in component (a), and

(d) a platinum-containing catalyst in a quantity sufficient to provide 0.1 to 1,000 weight parts platinum for each one million weight parts of the combined quantity of Components (a) through (c);

Component (a) having a viscosity of at least 500,000 centipoise at 25° C.; component (b) having a silicon-bonded hydroxyl content of no more than 1 weight percent; and Component (c) having the formula $Me_3SiO(MeHSIO)_a(Me_2SiO)_bSiOMe_3$ wherein a has an average value of at least 3 and b has an average value of 0 or more; and said liner comprising a backing bearing an adhesive-releasing coating durably adhered thereto which is the reaction product of components consisting essentially of

(e) a fluorosilicone polymer having the formula $ViMe_2SiO(-Me_2SiO)_x\{R^3QSi(Me)O\}_y(MeViSiO)_zSiMe_2Vi$, wherein Me denotes methyl, Vi denotes vinyl, R^3Q has a formula $CF_3CF_2CF_2CF_2CH_2CH_2$ and the sum of $x+y+z$ has a value of about 2500, and containing from 0.1 to 1.0 mol percent vinyl-containing siloxane units and at least 30 mol percent siloxane units which bear R^3Q radicals,

(f) an organohydrogenpolysiloxane having the formula $Me_3-SiO(MeHSiO)_{28}\{R^3QSi(Me)\}_{12}SiMe_3$ wherein R^3Q has the formula $CF_3CF_2CF_2CF_2CH_2CH_2$ and Me denotes methyl, in a quantity sufficient to provide 1–40 silicon-bonded hydrogen atoms per vinyl radical in Component (e), and

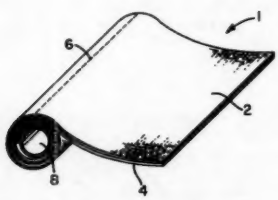
(g) a platinum-containing catalyst in a quantity sufficient to provide 0.1 to 1,000 weight parts platinum for each one million weight parts of the combined quantity of Components (e) and (f).

5,082,707

DISPOSABLE BEACH TOWEL

Michele P. Fazio, 12 Eastwood Ave., Utica, N.Y. 13501

Filed Feb. 7, 1990, Ser. No. 476,820
Int. Cl.[5] B32B *3/10*
U.S. Cl. 428—43 **12 Claims**



1. A disposable beach towel comprising:

a first layer of porous water absorbent material that has a high wet strength and having a width of at least 24 inches and a length of at least 48 inches; and

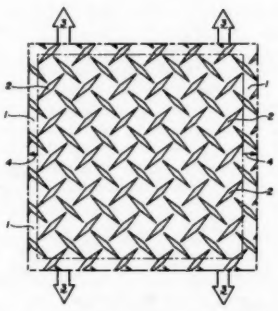
a second layer of porous water absorbent material affixed to said first layer of material and of substantially the same size wherein an exterior surface of said second layer of material has been treated with a waterproofing material that has been at least partially absorbed into said second layer of material thereby providing the second layer of material with the ability to prevent any passage of water therethrough.

5,082,708

TENSION FLOOR COVERING WITH REINFORCING LAYER

William J. Kauffman; George L. Lilley, both of Manheim, and David E. Ruch, Lancaster, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Feb. 1, 1989, Ser. No. 304,583
Int. Cl.[5] B32B *3/14, 3/10;* D06N *1/00;* E04F *15/16*
U.S. Cl. 428—47 **45 Claims**



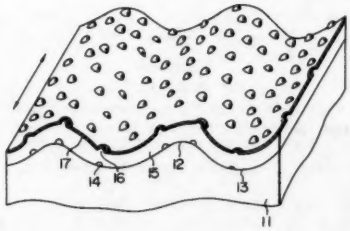
1. A resilient, tension floor covering comprising a reinforcing layer and a matrix material wherein a continuous layer of said matrix material covers said reinforcing layer, the reinforcing layer having been modified by chemical or mechanical means to have a relaxed compressive stiffness and relaxes tensile stiffness such that the floor covering will elongate under tension, the reinforcing layer being elongated in at least one direction, the total of the elongation and shrinkage due to aging of the floor covering being greater than 0.2% as measured over a six week period at room temperature.

5,082,709

THIN FILM-TYPE MAGNETIC DISK

Takashi Suzuki, Takatsuki, and Yoshiaki Kai, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 5, 1990, Ser. No. 474,926
Claims priority, application Japan, Feb. 8, 1989, 1-029108
Int. Cl.[5] G11B *23/00*
U.S. Cl. 428—64 **3 Claims**



1. A magnetic disk, comprising:

a thin-film magnetic layer;

a non-magnetic substrate having bulged portions which extend substantially parallel to a direction of movement of a magnetic head relative to the magnetic disk, said substrate having fine particle-like projections formed at least on said buldged portions, said projections having a height in a range of 100 to 500 Angstroms, a ratio of height to width of said projections in a direction of a plane of said substrate being greater than or equal to 0.1 and a surface density of said projections being in a range of 1 ×

$10^7/mm^2$ to $1 \times 10^9 mm^2$, said magnetic layer being formed on said substrate;

a protective layer formed on said magnetic layer; and

a lubricant layer formed on said protective layer.

5,082,710

COATED ARTICLE FOR HOT ISOSTATIC PRESSING

Joseph M. Wright, Santa Ana, Calif., assignor to Loral Aerospace Corp., New York, N.Y.

Division of Ser. No. 274,527, Nov. 21, 1988, Pat. No. 4,987,105. This application Dec. 11, 1989, Ser. No. 448,797

Int. Cl.[5] B32B *33/00*

U.S. Cl. 428—76 7 Claims

1. A coated article comprising:

an article encapsulated within an encapsulant and subjected to hot isostatic pressing; and

a coating composed of boron nitride and carbon in an amount effective to reduce interaction between the article and the encapsulant during the hot isostatic pressing, wherein:

said carbon is present in an amount up to about 30% by weight of the total boron nitride and carbon in said coating; said boron nitride and said carbon are present in a single layer between the article and the encapsulant; and said layer inertly coats the article, said layer thereby being easily removable from the article.

5,082,711

FLOCKED YARN

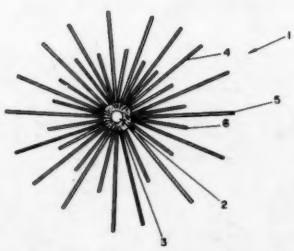
Robert L. Goerens, Esch/Alzette, Luxembourg, assignor to Uniroyal Englebert Textilcord S.A., Steinfort, Luxembourg

Continuation-in-part of Ser. No. 315,556, Feb. 24, 1989, abandoned. This application Apr. 26, 1990, Ser. No. 517,536

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1988, 3806275

Int. Cl.[5] B05D *1/04, 1/14;* B32B *3/02;* D02G *3/00*

U.S. Cl. 428—90 12 Claims



1. In a flocked yarn that comprises a finished carrier thread with an adhesive coating applied on the surface of the thread and treated flock that is electrostatically introduced into said adhesive coating, with said flock being of specific yet selectable denier, length, and density, and being disposed essentially radially all around on said carrier thread/coating, the improvement wherein:

said flock is a flock mixture that comprises different materials, including polyester flock and polyamide flock, with said flock mixture being distributed uniformly on said carrier thread/coating.

5,082,712

FLOOR COVERING/WALL COVERING

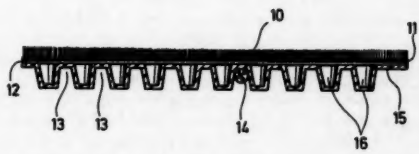
Hubertus C. Starp, Falkenweg 37, D-7400 Tübingen 1, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 914,475, Oct. 2, 1986, abandoned. This application Jan. 25, 1988, Ser. No. 147,712

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1985, 3535632

Int. Cl.[5] B32B *3/26, 5/22*

U.S. Cl. 428—95 41 Claims



1. Spacer for separating a surface, such as a floor or wall, from substantially heavy articles which may be loaded on said surface, for enabling positioning of cables between said surface and said substantially heavy articles, wherein said spacer is of planar configuration and has two planar sides, said spacer having load-bearing burl projections on at least one of said two planar sides, said projections further being arranged in an array and having between them intermediate spaces for the formation of cable channels, said cable channels extending in substantially intersecting directions, and said projections being configured to bear a loading in excess of 7500 kgf/m^2.

5,082,713

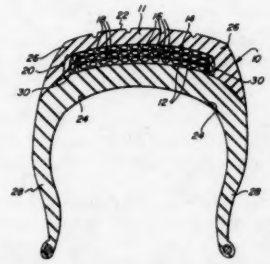
WIDE MONOFILAMENT REINFORCING CORDS EMPLOYING HIGH PERFORMANCE THERMOPLASTICS AND TIRE BELTS MADE THEREFROM

James H. Gifford, Orange, Conn., assignor to Pirelli Armstrong Tire Corporation, New Haven, Conn.

Filed Jul. 23, 1990, Ser. No. 557,422

Int. Cl.[5] B32B *5/12, 5/26, 5/28*

U.S. Cl. 428—107 27 Claims



1. A reinforcing belt for a pneumatic tire having shoulder portions, the reinforcing belt comprising:

at least two cord reinforced plies;

each ply having a plurality of substantially parallel spaced apart reforcing cords bound together in a matrix of an elastomeric material;

said reinforcing cords comprised of a material selected from the group consisting of nylons, polyesters, and polyphenylene ethers;

said plurality of reinforcing cords of said cord reinforced plies disposed to cross said plurality of reinforcing cords of any adjacent cord reinforced ply; and

each of said plurality of reinforcing cords having a substantially elliptic cross-section to improve handling of pneumatic tires in which the reinforcing belt is placed by resisting lateral movement and developing cornering force, and

also to extend the useful life of pneumatic tires in which the reinforcing belt is placed by providing a relatively thin and light reinforcing belt to reduce heat build-up, and also to reduce the amount of cord material needed to reinforce said cord reinforced plies.

5,082,714

MAGNETIC RECORDING MEDIA

Akio Yanai, and Yasuo Nishikawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 7, 1988, Ser. No. 255,005
Claims priority, application Japan, Oct. 7, 1987, 62-251451
Int. Cl.[5] B32B *3/10*
U.S. Cl. 428—141 **4 Claims**

1. Magnetic recording media comprising a nonmagnetic support having thereon in sequence a ferromagnetic metal film magnetic layer having a thickness of from 0.02 to 2 μm and a protective layer comprising from 1 to 50 mg/m^2 of a polyoxyhexafluoropropylene comprising a chain of —(CF_2CF_2C-F_2—O)— units and being terminally modified with a polar terminal group and having a main chain of linear structure; and

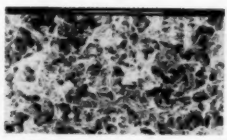
wherein the terminal modifying group of the terminally modified polyoxyhexafluoropropylene is selected from the group consisting of —COOH, —OH, —SH, —$COOCH_3$ and —CONHR, where R is a hydrocarbon group having 1 to 22 carbon atoms.

5,082,715

CONFORMABLE POLYMERIC MARKING SHEET

James E. Lasch; James M. Kaczmarczik, and James A. Klein, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Aug. 28, 1989, Ser. No. 398,971
Int. Cl.[5] B29D *27/04;* **B32B** *3/10*
U.S. Cl. 428—143 **13 Claims**



1. A conformable marking sheet, having a top surface and a bottom surface, comprising a base sheet comprising microporous thermoplastic polymer, which marking sheet is characterized by:

A. exhibiting, when tested using standard tensile strength testing apparatus, at least 25% inelastic deformation after being stretched once to 115% of original sample length; and

B. a top surface useful as a marking indicium and having a multiplicity of retroreflective elements partially embedded therein.

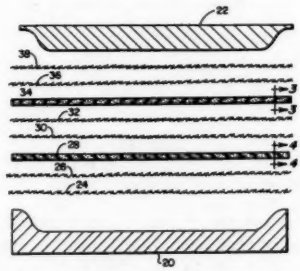
5,082,716

HEADLINER

Marshall G. Satterfield, Johnstown; David M. Steinke, Baltimore, and Michael Blankenship, Pataskala, all of Ohio, assignors to Process Bonding, Inc., Johnstown, Ohio

Division of Ser. No. 421,965, Oct. 16, 1989, Pat. No. 5,007,976.
This application Jan. 28, 1991, Ser. No. 646,956
Int. Cl.[5] B32B *5/18, 7/02;* **B60R** *13/02*
U.S. Cl. 428—175 **4 Claims**

1. A cured molded smooth contoured layered panel, said, layers being substantially coextensive, said panel including in sequence a decorative outer layer adhesively joined to a first open celled soft-feeling polyurethane foam layer, the cells of which are unfilled with hard material, a fiber glass layer sandwiched between and adhesively bonded to both the first foam layer and a second open celled hard-feeling polyurethane foam layer the cells of which are filled with cured adhesive, and a



second fiber glass layer adhesively bonded to the second foam layer.

5,082,717

STYRENE-BASED RESIN COMPOSITE MATERIAL

Atsunori Yaguchi, Chiba, and Keisuke Funaki, Ichihara, both of Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1989, Ser. No. 443,937
Claims priority, application Japan, Dec. 16, 1988, 63-316168; Dec. 16, 1988, 63-316169; Jan. 31, 1989, 1-019497
Int. Cl.[5] B32B *27/28;* **C08J** *7/04;* **B41J** *31/05;* **C09D** *185/02*
U.S. Cl. 428—207 **5 Claims**

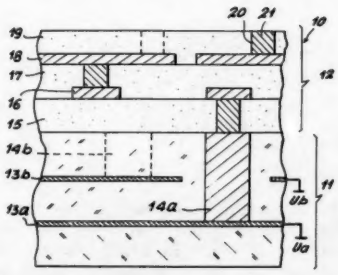
1. An ink ribbon which comprises a stretched base film consisting essentially of a styrene-based polymer having a syndiotactic configuration, an ink layer formed on the base film and a heat resistant lubricating layer consisting essentially of a curable phosphazene compound formed on the base film at the opposite side to the ink layer.

5,082,718

METHOD FOR DEPOSITING AN INSULATING LAYER ON A CONDUCTIVE LAYER OF A MULTI-LAYER CONNECTION BOARD OF ONE VERY LARGE SCALE INTEGRATED CIRCUIT

Philippe Chantraine, Neuilly-Sur-Seine, and Marta Zorrilla, Fontenay-Le-Fleury, all of France, assignors to Bull S.A., Paris, France

Filed Jul. 24, 1990, Ser. No. 556,488
Claims priority, application France, Jul. 27, 1989, 89 10158
Int. Cl.[5] B32B *3/00;* **B44C** *1/22*
U.S. Cl. 428—209 **21 Claims**



21. A connection board (10) for at least one very large scale integrated circuit, including a multi-layer structure (12) comprising alternating conductive and insulating layers, each conductive layer including conductors topped with vias (21), the insulating layers being substantially coplanar with the upper faces of the vias (21) of the subjacent conductive layer and the uppermost insulating layers having steps of a maximum height

(S) not greater than a predetermined value (V), wherein said step height (S) is equal to a height $(SN)=H(1-DOP)^n$, wherein:

H is a maximum height for a subjacent conductive layer;

DOP is a planarization factor of a material used to form said uppermost insulating layers; and

n represents a number of strata of said insulating layer, which is an integer $\geqq 1$.

5,082,719

WATER RESISTANT COMMUNICATIONS CABLE

Candido J. Arroyo, Lithonia, Ga., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 115,123, Oct. 30, 1987, Pat. No. 4,867,526. This application Jul. 12, 1989, Ser. No. 378,956

Int. Cl.[5] B32B *27/14, 27/20;* G02B *6/44;* H02G *3/04*

U.S. Cl. 428—219 11 Claims

1. A waterblocking tape, which comprises:

a single non-woven substrate tape which comprises a spunbonded non-woven plastic material and which prior to any treatment thereof has a relatively high tensile strength; and

a superabsorbent material which impregnates said substrate tape to fill substantially cells thereof such that said substrate tape after impregnated with said superabsorbent material has a relatively low porosity compared to its porosity prior to impregnation.

5,082,720

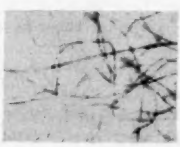
MELT-BONDABLE FIBERS FOR USE IN NONWOVEN WEB

Duane J. Hayes, Pierce, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 6, 1988, Ser. No. 191,043

Int. Cl.[5] D03D *3/00*

U.S. Cl. 428—224 14 Claims



1. A bicomponent fiber comprising:

(a) a first component comprising an oriented, crimpable, at least partially crystalline polymer, and adhering to the surface of said first component,

(b) a second component, which comprises a compatible blend of polymers, comprising:

(1) from about 15 to about 90% by weight of at least one amorphous polymer, and

(2) from about 85 to about 10% by weight of at least one at least partially crystalline polymer,

the melting temperature of said second component being at least 30° C. lower than the melting temperature of said first component, but at least equal to or in excess of about 130° C., the concentration of said amorphous polymer of said second component being sufficiently high to reduce the melt flow rate of said at least partially crystalline polymer of said second component, but not so high as to prevent said bicomponent fiber from bonding to a like bicomponent fiber, provided that if the bicomponent fiber is spun in a sheath-core configuration, said first component is the core and said second component is the sheath.

5,082,721

FABRICS FOR PROTECTIVE GARMENT OR COVER

W. Novis Smith, Jr., 412 South Perth Street, and Peter Holemans, 3204 Summer Street, both of Philadelphia, Pa.

Continuation-in-part of Ser. No. 311,284, Feb. 16, 1989, Pat. No. 4,970,105. This application Aug. 15, 1990, Ser. No. 567,972

Int. Cl.[5] B32B *7/00*

U.S. Cl. 428—252 14 Claims

1. A laminated fabric for protective clothing, containers and covers for protection against hazardous liquids and vapors consisting of a layer of an tear resistant fabric of high tensile fibers, an outer film layer bonded to said tear resistant fabric comprising a fusible or meltable polyhalogenated ethylene resin, and an inner film comprising an ethylene-vinyl alcohol copolymer layer bonded to said tear resistant fabric, whereby said laminated fabric prevents the passage of hazardous vapors.

5,082,722

PROCESS FOR TREATING NETTING WITH AN ANTIFOULING COMPOSITION AND PRODUCT PRODUCED THEREBY.

Richard J. Guglielmo, Sr., Lambs Lane, Cresskill, N.J. 07626

Division of Ser. No. 145,978, Jan. 20, 1988. This application Sep. 21, 1990, Ser. No. 586,255

Int. Cl.[5] D06B *19/00*

U.S. Cl. 428—255 18 Claims

1. An aquaculture substrate coated with an antifouling composition comprised of a chloro isophthalic acid derivative present in an amount of from 5 to 10 percent by weight and a benzothiazole present in an amount of from 2 to 5 percent by weight in said antifouling composition.

5,082,723

OSMOTICALLY ENHANCED ABSORBENT STRUCTURES

James R. Gross, Appleton, and Ronald S. Harland, Neenah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sep. 27, 1989, Ser. No. 413,149

Int. Cl.[5] B32B *5/16*

U.S. Cl. 428—283 29 Claims

1. An absorbent structure, said absorbent structure comprising a superabsorbent material, said superabsorbent material defining a chamber substantially void of said superabsorbent material, said chamber containing an amount of an osmotic material.

5,082,724

PHOTOGRAHIC PAPER SUPPORT

Toru Katsura, and Hiroo Kaji, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Filed Feb. 6, 1990, Ser. No. 475,907
Claims priority, application Japan, Feb. 6, 1989, 1-028079
Int. Cl.[5] B32B *23/08;* S21H *1/34*
U.S. Cl. 428—303 5 Claims

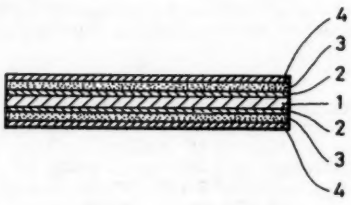
1. A photographic support consisting essentially of base paper and a polyolefin resin with which both sides of the base paper are coated, the base paper having a standard deviation of the weight variation caused by a wire mark formed on the base paper of 1.0 g/m^2 or less and a standard deviation of the weight variation caused by the dispersibility of pulp fibers composing the base paper of 8.0 g/m^2 or less.

5,082,725

MATERIAL FOR GASKET

Hiroshi Saito, and Michihiro Inagaki, both of Nara, Japan, assignors to Nichias Corporation, Tokyo, Japan

Filed Jan. 31, 1991, Ser. No. 648,224
Claims priority, application Japan, Feb. 1, 1990, 2-20482
Int. Cl.[5] B32B *3/26*
U.S. Cl. 428—304.4 3 Claims



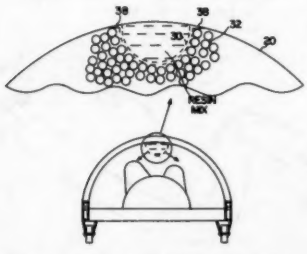
1. A material for gasket, in which gum foam layers are formed on a metal plate, wherein said gum foam layers include organic and/or inorganic fiber.

5,082,726

INTERNAL MANIFOLD THAT AIDS IN FILLING MOLDS

Alfons Bastiaens, Westerlo, and Norbert Pauwels, Herselt, both of Belgium, assignors to Grace N.V., Westerlo, Belgium

Filed Nov. 1, 1989, Ser. No. 430,537
Int. Cl.[5] B32B *3/26*
U.S. Cl. 428—313.3 11 Claims



8. A buoyant structure comprising a first volume consisting essentially of syntactic foam and a second volume comprising a plurality of buoyant bodies encased in a matrix of syntactic foam, said foam comprising a hardenable resin and a multiplicity of hollow microspheres.

5,082,727

FLAMEPROOF PRODUCT

Stan Thijssen, Bad Hersfeld, and Jürgen Laser, Kirchheim, both of Fed. Rep. of Germany, assignors to Matec Holding AG, Switzerland

Filed Dec. 22, 1989, Ser. No. 455,158
Claims priority, application Switzerland, Dec. 23, 1988, 4783/88
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—328 19 Claims

1. A flameproof product containing organic fibres, a reaction resin as a binder and flameproofing agents, wherein the reaction resin is up to 50% by weight and the flameproofing agents comprise a combination of flameproofing agents which consists of organic borates, salts of phosphoric acids and oxide hydrates of metals taken from the group consisting of magnesium, aluminum and mixtures thereof, and whose content is 3–35% by weight; said combination of flameproofing agents comprising 20–60% by weight of organic borates, 15–50% by weight of salts of phosphoric acids and 15–50% by weight of oxide hydrates.

5,082,728

MAGNETIC DISC

Akira Miyake, Osaka; Norio Akai, Ibaraki, and Tomizo Taniguchi, Kyoto, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Continuation of Ser. No. 310,284, Feb. 14, 1989, abandoned.
This application Sep. 20, 1990, Ser. No. 586,395
Claims priority, application Japan, Feb. 17, 1988, 63-34709
Int. Cl.[5] G11B *23/00*
U.S. Cl. 428—329 3 Claims

1. A magnetic disc which comprises:

a non-magnetic substrate,

a magnetic layer comprising a metal magnetic powder disposed in a resinous binder formed on one side of said substrate and

a back coating formed on the other, opposite side of said substrate, said coating comprising a binder resin having dispersed therein an inorganic powder having a Mohs hardness of not less than 4 selected from at least one member of the group consisting of γ-Fe_2O_3 and cobalt-containing γ-Fe_2O_3, which powder has an average particle size of at least 0.1 micron and is contained in an amount of at least 5% by volume based on the volume of the coating.

5,082,729

MAGNETIC RECORDING MEDIUM FOR A VIDEO TAPE RECORDER AND A METHOD FOR PREPARING THE SAME

Tetsuji Nishida; Shinji Saito, and Naoyoshi Chino, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 19, 1988, Ser. No. 259,668
Claims priority, application Japan, Oct. 19, 1987, 62-264728
Int. Cl.[5] G11B *23/00*
U.S. Cl. 428—329 14 Claims

1. A magnetic recording medium for a video tape recorder comprising a nonmagnetic support having thereon a magnetic medium, wherein said magnetic medium consists essentially of a thin uniform upper magnetic layer and an under magnetic layer, said under magnetic layer containing ferromagnetic particles of metal oxide, said thin uniform upper magnetic layer being thinner than said under magnetic layer, said upper magnetic layer containing ferromagnetic particles of metal oxide, wherein said under magnetic layer contains the ferromagnetic particles having a specific surface area by a BET method of from 26 to 50 m^2/g and a coercive force (Hc_1) of from 500 to 1,000 Oe; said upper magnetic layer contains the ferromagnetic particles having a specific surface area by a BET method of from 30 to 60 m^2/g and a coercive force (Hc_2) of from 600 to

1,200 Oe; the dry thickness of the upper magnetic layer is from 0.1 to 1.0 μm; and the coercive force (Hc_2) of the ferromagnetic particles for the upper magnetic layer is higher than the coercive force (Hc_1) of the ferromagnetic particles for the under magnetic layer.

5,082,730

STRETCHED POLYESTER FILM HAVING AN ANTISTATIC COATING COMPRISING A POLYMER HAVING PYRROLIDIUM RINGS IN THE MAIN CHAIN

Naohiro Takeda, Yokohama; Yuzo Otani, Tokyo; Nariaki Okajima, Yokohama, and Masahiro Kita, Nagahama, all of Japan, assignors to Diafoil Company, Limited, Tokyo, Japan

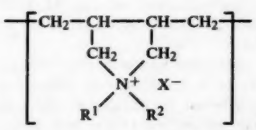
Filed Dec. 2, 1988, Ser. No. 279,199

Claims priority, application Japan, Dec. 4, 1987, 62-307272; Dec. 22, 1987, 62-324469; Dec. 28, 1987, 62-334957; Dec. 28, 1987, 62-334958; Dec. 28, 1987, 62-334959; Dec. 28, 1987, 62-334961

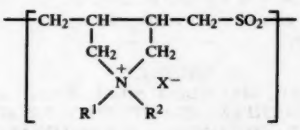
Int. Cl.[5] B32B *7/00*; C07D *295/00*

U.S. Cl. 428—336 **8 Claims**

1. A stretched antistatic laminate film comprising at least one coating layer having a thickness in the range from 0.01 to 5 μm and containing a polymer having pyrrolidium rings in the main chain of the polymer on a polyester film layer, said polymer having pyrrolidium rings in the main chain of the polymer containing the repeating unit represented by the following formula (I) or (II):



(I)



(II)

wherein R^1 and R^2 independently represent respectively an alkyl or phenyl group which may be substituted, R^1 and R^2 may chemically bond to form a ring, or one of R^1 and R^2 represents a hydrogen atom and X^- represents a halogen atom, an inorganic acid residue, and organic sulfonic acid residue or a carboxylic acid residue, said coating layer being formed on the polyester film layer by an in-line coating method, said in-line coating method comprising applying said coating layer to a uniaxially stretched polyester film which has been uniaxially stretched by 2–6 times at a temperature from 60 to 130° C. by a roll stretching method and then optionally drying, stretching the resultant coated uniaxially stretched polyester film by 2–6 times at a temperature from 80° to 130° C. in the direction perpendicular to the uniaxial stretching direction and then heat treating the coated stretched polyester film at a temperature from 150° to 250° C. for 1 to 600 seconds.

5,082,731

PRODUCING A COPOLYESTER FROM A LOWER DIALKYL ESTER OF TEREPHTHALIC ACID, A GLYCOL AND A DICARBOXYLIC ACID

Anthony W. Cooke, and Monika E. Bader, both of Charlotte, N.C., assignors to Hoechst Celanese Corporation, Charlotte, N.C.

Division of Ser. No. 489,583, Mar. 7, 1990, Pat. No. 4,990,594. This application Jan. 24, 1991, Ser. No. 645,431

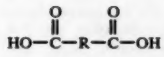
Int. Cl.[5] D04H *1/54, 3/14*

U.S. Cl. 428—362 **5 Claims**

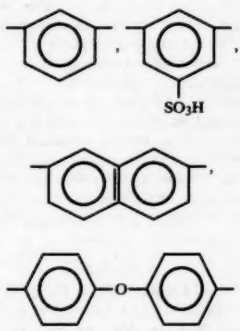
1. An enhanced bicomponent fiber existing in a sheath/core relationship comprising

a core component of polyester; and

a sheath component being a copolyester made form the process for making a copolyester from a lower dialkyl ester of a terephthalic acid, a diacarboxylic acid having the formula



wherein R is selected from the group consisting of



and —$(CH2)_n$—where n=2–12 and a glycol comprising the steps of:

a. reacting said lower alkyl ester of terephthalic acid and glycol by an ester interchange reaction to produce a first monomer and alcohol;

b. removing said alcohol during said ester interchange reaction;

c. reacting a mixture of dicarboxylic acid and glycol by a direct esterification reaction to produce a second monomer and water;

d. polymerizing a mixture of said first and second monomers by a polycondensation reaction to produce said copolyester and glycol; and

e. removing said glycol during said polycondensation reaction;

wherein the improvement comprises: adding an effective catalytic amount of manganese and lithium before or during said ester interchange reaction and said direct esterification; and adding an effective catalytic amount of antimony at or before the beginning of polycondensation reaction.

5,082,732

RUBBER PARTICLES FOR RESIN REINFORCEMENT AND REINFORCED RESIN COMPOSITION

Eiji Ueda, and Noriaki Umeda, both of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 16, 1989, Ser. No. 367,142

Claims priority, application Japan, Jun. 21, 1988, 63-151210

Int. Cl.[5] B32B *5/16, 27/08;* C08L *53/02*

U.S. Cl. 428—402 **20 Claims**

1. Rubber particles comprising a hydrogenated block copolymer of a conjugated diene and a vinyl aromatic compound, said particles having a glass transition temperature of −30° C. or less, a gel content of at least 10%, an average particle size of 0.01 to 5.0 μm, and a micro-phase separating structure having hard segments and soft segments, wherein the hard segments and soft segments are alternately laminated together in the form of concentric multilayers.

5,082,733

MAGNETIC RECORDING MEDIUM CONTAINING MAGNETIC PARTICLES SURFACE TREATED WITH A GLYCIDYL COMPOUND

Hideomi Watanabe; Mikio Ohno; Hiroshi Hashimoto, and Tsutomu Okita, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 18, 1989, Ser. No. 340,617

Claims priority, application Japan, Apr. 18, 1988, 63-93553

Int. Cl.[5] G11B *23/00*

U.S. Cl. 428—403 **14 Claims**

1. A magnetic recording medium comprising a nonmagnetic support having thereon a magnetic recording layer which contains ferromagnetic particles dispersed in a binder, wherein the ferromagnetic particles have been surface-treated with a glycidyl compound having a molecular weight of 1,000 or less and having an epoxy equivalent of 200 g/eq. or less, wherein surface-treatment of the magnetic particles has been carried out by a process which comprises dispersing the glycidyl compound and the ferromagnetic particles in a portion of a solvent used for preparing a magnetic coating composition to form a first solution, and wherein a binder is added to the remainder of the solvent to form a second solution, and then the first and second solutions are added together, and the resultant mixture is then mixed, kneaded and dispersed to prepare a magnetic coating composition, and thereafter the resulting magnetic coating composition is coated on the nonmagnetic support, and then the magnetic coating composition is dried to form the magnetic recording layer.

5,082,734

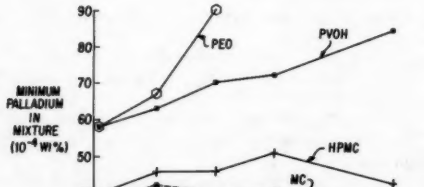
CATALYTIC, WATER-SOLUBLE POLYMERIC FILMS FOR METAL COATINGS

George D. Vaughn, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 13, 1990, Ser. No. 609,718

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—411.1 **59 Claims**



1. A catalytically inert film formed from an aqueous solution comprising polymer and a compound of a catalytic metal of Group 8; wherein said film can be selectively activated to catalyze electroless deposition by application of heat, wherein said polymer is a selected from the group consisting of

(i) a water soluble polymer selected from the group consisting of a cellulosic polymer, a vinyl alcohol polymer, an oxyolefin polymer and mixtures thereof,

(ii) an aqueous emulsion comprising a surfactant and a water insoluble polymer capable of forming a coherent film at a temperature of less than about 200° C. from said aqueous solution,

(iii) a polysilica, and

(iv) a mixture of a group (i) water soluble polymer and a crosslinking agent for said group (i) water soluble polymer, and wherein said polymer and said metal are in the weight ratio of at least about 3:1.

5,082,735

PROCESS OF CURING METHYLHYDROSILOXANES

Anthony Revis, Freeland, and William H. Campbell, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed May 4, 1990, Ser. No. 519,200

Int. Cl.[5] B32B *27/36*

U.S. Cl. 428—412 **28 Claims**

1. A process of curing and cross-linking methylhydrosiloxanes comprising contacting and forming a mixture of an allyl amide with at least one methylhydrosiloxane in the presence of a Group VIII metal catalyst, and heating the mixture of the allyl amide, the methylhydrosiloxane, and the Group VIII metal catalyst, in the presence of ambient moisture until the methylhydrosiloxane becomes cured and cross-linked.

5,082,736

ENCAPSULATED WINDOW GLASS, READY FOR INSTALLATION, AND A METHOD FOR ITS PRODUCTION

Jean-Louis Bravet, Thourotte, and Gerard Daude, Villenave D'Ornon, both of France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Jan. 12, 1990, Ser. No. 464,004

Claims priority, application France, Jan. 12, 1989, 89 00290

Int. Cl.[5] B32B *27/38, 27/40*

U.S. Cl. 428—425.6 **10 Claims**

1. A solid or laminated window glass equipped with a molded peripheral profile, intended to be installed in a window opening by gluing, wherein the molded profile presents at last one reactive face comprising free OH groups which are able to subsequently react with a strip of adhesive used for installation of the window glass in said window opening.

5,082,737

MAGNETIC RECORDING MEDIA HAVING A BRANCHED THERMOPLASTIC POLYURETHANE BINDER CONTAINING A POLYSILOXANE COMPONENT IN THE MAIN CHAIN

Michael Bobrich, Boehl-Iggelheim; Hermann Roller, Ludwigshafen; August Lehner, Roedersheim-Gronau; Uwe Keppeler, Ludwigshafen; Rudolf Suettinger, Heidelberg; Werner Loch, Appenweier-Nesselried; Werner Lenz, and Guenther Schulz, both of Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 23, 1990, Ser. No. 571,198

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1989, 3929165

Int. Cl.[5] G11B *23/00*

U.S. Cl. 428—425.9 **11 Claims**

1. A magnetic recording medium, consisting of a non-magnetic substrate and at least one magnetic layer which is applied firmly thereon and is based on a magnetic material finely dispersed in a binder consisting of not less than 50% by weight of

a thermoplastic polyurethane, wherein the thermoplastic polyurethane used is a siloxane-containing, isocyanate-free, branched polyurethane which is soluble in tetrahydrofuran, has OH-containing urea groups at the chain ends and a molecular weight of from 4,000 to 30,000 and is prepared from

A) 1 mole of a polyol having a molecular weight of from 400 to 4,000,

B) from 0.3 to 9 moles of a diol of 2 to 18 carbon atoms,

C) from 0.01 to 1 mole of a triol of 3 to 18 carbon atoms,

D) from 0.001 to 0.4 mole of an organofunctional polysiloxane compound having two terminal groups reactive to isocyanates and a molecular weight of from 300 to 4,000,

E) from 1.25 to 13 moles of a diisocyanate of 6 to 30 carbon atoms, the NCO:OH ratio in the sum of the components A, B, C. and D being 1.05:1.0–1.4:1.0, and

F) from 0.05 to 4 moles of an OH-containing primary or secondary amine which is reactive to isocyanates.

5,082,738

POLYESTER FILM PRIMED WITH AN AMINOFUNCTIONAL SILANE, AND FILM LAMINATES THEREOF

Howard W. Swofford, Taylors, S.C., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 207,069, Jun. 15, 1988, Pat. No. 4,898,786.
This application Nov. 29, 1989, Ser. No. 443,571
The portion of the term of this patent subsequent to Feb. 6, 2007, has been disclaimed.
Int. Cl.[5] B32B *17/10*
U.S. Cl. 428—437 **15 Claims**

9. A laminate structure comprising a glass sheet, a polyvinylbutyral sheet adhering to the glass sheet, and a sheet of high modulus biaxially oriented polyester film adhering to said polyvinylbutyral sheet, and an adhesive composition present between said polyester sheet and said polyvinylbutyral sheet, said adhesive composition comprising the dried residue of a hydrolyzed aminosilane compound having the formula in the unhydrolyzed state:

$$XSi(R^2)_a(R^3)_b$$

wherein X is a radical selected from the group consisting of $H_2NR^1HNR^1$—and $H_2NR^1HNR^1HNR^1$—; the R^1's are the same or different groups selected from the group consisting of C_1 to C_8 alkyl or phenyl; R^2 is a hydrolyzeable group selected from the group consisting of C_1 to C_8 alkoxy, an acetoxy group or a halide; R^3 is a nonreactive, nonhydrolyzeable group selected from the group consisting of C_1 to C_3 alkyl or phenyl; (a) is an integer ranging from 1 to 3; (b) is an integer ranging from 0 to 2, with the sum of (a) and (b) being 3, said adhesive composition being present at a weight effective to improve the adhesion of said polyvinylbutyral sheet to said polyester sheet.

5,082,739

METALLIZED SPINEL WITH HIGH TRANSMITTANCE AND PROCESS FOR PRODUCING

Donald W. Roy, Golden; James L. Hastert, Lakewood; Kenneth E. Green, Arvada; Lawrence E. Courbrough, Arvada, and Aurielo Trujillo, Arvada, all of Colo., assignors to Coors Porcelain Company, Golden, Colo.

Filed Apr. 22, 1988, Ser. No. 184,729
The portion of the term of this patent subsequent to Jun. 5, 2007, has been disclaimed.
Int. Cl.[5] C04B *35/02*; B29D *11/00*
U.S. Cl. 428—450 **25 Claims**

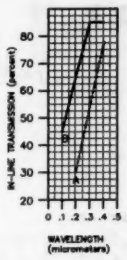
1. A metallized, sintered polycrystalline body having a transmittance per 1.88 mm thickness in all wavelengths from about 0.4 microns to about 0.5 microns of not less than about 84% produced by a process, comprising:

providing a powder comprising at least 97 weight percent magnesia-alumina spinel;

producing a closed porosity body from said powder;

heating said closed porosity body to at least about 1400° C. at an elevated pressure of at least about 20,000 psi to reduce residual porosity;

providing a mixture comprising a metallic material;



applying said mixture to said reduced residual porosity body to produce a body which is at least partly coated;

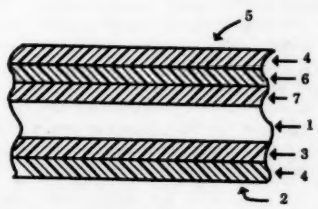
firing said coated body at a temperature of at least about 1200° C. to produce a body with a metallized layer.

5,082,740

PLASTIC CLAD METAL LAMINATE FOR HEAT TRANSFER PARTITIONS

Wilhelm E. Walles, Freeland, Mich.; Felix Achille, Reynoldsburg, Ohio; Terry H. Fiero, Newark, Ohio; Steve D. Gregory, Worthington, Ohio; Timothy O. Kirch, Newark, Ohio, and Bradley D. Stevens, Frazeysburg, Ohio, assignors to The Dow Chemical COmpany, Midland, Mich.

Filed Mar. 26, 1990, Ser. No. 499,849
Int. Cl.[5] B32B *15/08, 15/04, 27/36*
U.S. Cl. 428—461 **13 Claims**



1. A plastic clad metal laminate suitable for forming into heat transfer partitions for use in an apparatus for simultaneous heat and mass transfer said laminate comprising a metal substrate of a thickness from 0.001 to 0.1 inch (0.025 to 2.5 mm) having adhered to one or both sides thereof a metal adherent thermoplastic resin layer of a thickness of from 0.00001 to 0.003 inch (0.00025 to 0.050 mm) comprising one or more sublayers of one or more thermoplastic resins with one sublayer forming an exposed surface having a surface wettability as measured by ASTM D-2578 of at least 50 dyne/cm, said thermoplastic resin of said sublayer comprising a sulfonated, neutralized, aromatic monomer containing resin or aromatic compound.

5,082,741

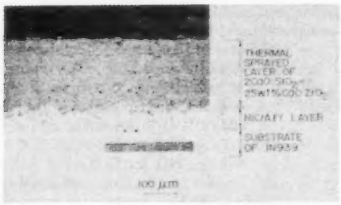
THERMAL SPRAY MATERIAL AND THERMAL SPRAYED MEMBER USING THE SAME

Hatsuo Taira, Himeji; Masakazu Ikeda, Kitakyushu; Yoshio Harada, Akashi, and Hiroshi Hagiwara, Urawa, all of Japan, assignors to Tocalo Co., Ltd., Kobe and Onoda Cement Co., Ltd., Onoda, both of, Japan

Division of Ser. No. 547,696, Jul. 2, 1990, Pat. No. 5,032,557.
This application Feb. 8, 1991, Ser. No. 653,032
Int. Cl.[5] B32B *15/04*
U.S. Cl. 428—469 **12 Claims**

1. A thermal sprayed member obtained by forming a high

temperature resistance/corrosion resistance metal spray layer on a thermal resistant substrate, the high temperature resistance/corrosion resistance properties of said metal spray layer



being equal to or higher than those of said thermal resistant substrate, and by thermal spraying the resultant with a thermal spray material consisting of 60–95 wt % of γ-$2CaO.SiO_2$ and 5–40 wt % of $CaO.ZrO_2$.

5,082,742

COMPOSITE OF A STYRENIC POLYMER ADHERED TO A POLYOLEFIN

Allen R. Padwa, Worcester, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Sep. 24, 1990, Ser. No. 589,805
Int. Cl.[5] B32B *27/08*
U.S. Cl. 428—515 **22 Claims**

1. A tie-layer system suitable for combining a styrenic polymer and a polyolefin which is comprised of at least two coreactive, functionalized polymers either in laminate contact or as a blend; the first such polymer being

(a) an epoxy functionalized styrenic polymer wherein said epoxy functional group is selected from the group consisting of glycidyl (alkyl) acrylate, allyl glycidyl ethers, vinyl glycidyl ethers and glycidyl itaconates; and the second such polymer being

(b) an acid functionalized polyolefin wherein said acid functional group is selected from the group consisting of acrylic, methyacrylic, vinyl benzoic, crotonic and cinnamic acids.

5,082,743

RESIN COMPOSITION AND MULTILAYERED STRUCTURE

Sumio Itamura, and Tohei Moritani, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Sep. 21, 1990, Ser. No. 586,598
Claims priority, application Japan, Sep. 29, 1989, 1-255985
Int. Cl.[5] B32B *27/08, 27/28;* C08L *29/04*
U.S. Cl. 428—520 **2 Claims**

1. A resin composition comprising:

(A) 60 to 95% by weight of an ethylene-vinyl acetate copolymer having an ethylene content of 20 to 65 mol % and a saponification degree of vinyl acetate component of at least 96%,

(B) 4.5 to 39.5% by weight of an ethylene-vinyl acetate copolymer having an ethylene content of 60 to 98 mol %, and

(C) at least 0.5% by weight of a saponified product of an ethylene-vinyl acetate copolymer having an ethylene content of 68 to 98 mol % and a saponification degree of vinyl acetate component of at least 20%,

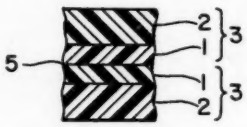
the incorporation ratio of (C) based on the sum of (B) and (C) being not more than 38% by weight.

5,082,744

PACKAGING MATERIALS

Mutsuo Akao, and Koji Inoue, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Division of Ser. No. 218,908, Jul. 14, 1988, Pat. No. 4,981,734.
This application Oct. 11, 1990, Ser. No. 595,419
Claims priority, application Japan, Jul. 17, 1987, 62-177303; Oct. 26, 1987, 62-268227; Nov. 20, 1987, 62-291947; Jan. 14, 1988, 63-6063; Jan. 18, 1988, 63-6940; Jan. 18, 1988, 63-6941
Int. Cl.[5] B32B *27/08*
U.S. Cl. 428—522 **6 Claims**



1. A packaging material which comprises a pair of inflation film layers each of which is a coextruded multilayer inflation film layer, said pair of layers being disposed symmetrically and joined through a pseudo-adhesive portion formed by blocking thereof.

5,082,745

RARE EARTH BASED PERMANENT MAGNET HAVING CORROSION-RESISTANT SURFACE FILM AND METHOD FOR THE PREPARATION THEREOF

Ken Ohashi, Fukui, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1990, Ser. No. 620,885
Claims priority, application Japan, Nov. 30, 1989, 1-311589
Int. Cl.[5] B22F *3/00*
U.S. Cl. 428—552 **5 Claims**

1. A rare earth-based sintered permanent magnet having a corrosion-resistant surface film which comprises, as an integral body:

(a) a powder-metallurgically sintered anisotropic body having a chemical composition consisting, in atomic percentages, of from 13 to 16% of a rare earth element, from 6 to 8% of boron, from 1 to 5% of cobalt, chromium or a combination thereof and from 0.5 to 2% of a metallic element selected from the group consisting of aluminum, niobium, molybdenum and titanium, the balance being iron and other unavoidable impurity elements, and having a density of at least 95% of the true density; and

(b) a coating film formed on the surface of the sintered body from a material having resistance against corrosion and oxidation.

5,082,746

AS-CONTINUOUSLY CAST BEAM BLANK AND METHOD FOR CASTING CONTINUOUSLY CAST BEAM BLANK

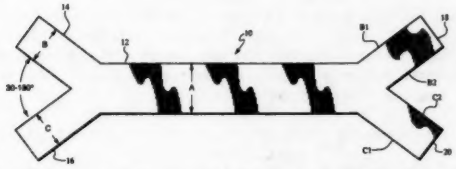
Gordon E. Forward, Texas Industries, Inc., 7610 Stemmons Freeway, Dallas, Tex. 75247; Libor F. Rostik, and Lloyd M. Schmelzle, both of Chaparral Steel, 300 Ward Rd., Midlothian, Tex. 76065

Filed Apr. 20, 1990, Ser. No. 511,653
Int. Cl.[5] A22D *11/00;* E04C *3/06*
U.S. Cl. 428—582 **56 Claims**

1. An as-continuously cast beam blank comprising a web portion and a plurality of opposed flange precursor portions extending from opposite ends of sad web portion, said web portion having an average thickness of no greater than about 3 inches, and each of said flange precursor portions having an average thickness of no greater than about 3 inches, said blank having the microstructure illustrated in FIG. 2 substantially throughout the cross-section of said beam blank.

35. A process for making a beam, comprising the steps of continuously casting a beam blank comprising a web portion

and a plurality of opposed flange precurser portions extending from opposite ends of said web portion, said web portion having an average thickness of no greater than about 3 inches, and each of said flange precursor portions having an average thickness of no greater than about 3 inches, said blank having



the microstructure illustrated in FIG. 2 substantially throughout its cross-section, and thereafter reducing said as-continuously cast beam blank through rolling by a reduction of no greater than about 3:1, whereby the final finished beam shape and dimension is attained.

5,082,747

MAGNETIC RECORDING DISK AND SPUTTERING PROCESS AND APPARATUS FOR PRODUCING SAME

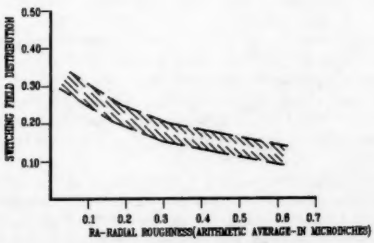
Virgle L. Hedgcoth, 1524 Hacienda Pl., Pomona, Calif. 91768

Division of Ser. No. 210,119, Jun. 22, 1988, Pat. No. 4,894,133, which is a continuation of Ser. No. 926,676, Nov. 3, 1986, abandoned, which is a division of Ser. No. 796,768, Nov. 12, 1985, Pat. No. 4,735,840. This application Jan. 12, 1990, Ser. No. 464,339

The portion of the term of this patent subsequent to Apr. 5, 2005, has been disclaimed.

Int. Cl.[5] H01F *1/00*

U.S. Cl. 428—611 **24 Claims**



1. A magnetic thin film recording disk comprising:

a substrate having an electroless plated nickel surface layer, the substrate including aluminum, the substrate characterized by a physically abraded surface having a series of physical circumferential texturing of hills and valleys prior to any sputtering operation to encourage a circular anisotropic orientation of crystal growth during sputtering, the hill-to-valley distance being within the range of 50 to 500 Angstroms;

a thin film chromium nucleating layer having a body centered cubic structure with a (110) orientation of its crystalographic plane parallel to a plane of the substrate;

a thin film magnetic layer of a cobalt alloy disposed on the nucleating layer with an epitaxial growth of a hexagonal close packed phase with a C axis parallel to the plane of the substrate, and

a thin film carbon protective film disposed on the magnetic layer.

5,082,748

FE-MN ALLOY PLATED STEEL SHEET AND MANUFACTURING METHOD THEREOF

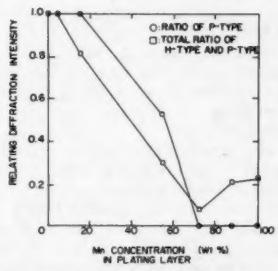
Duk S. Ahn; Jae R. Lee, and Chan S. Park, all of Pohong, Rep. of Korea, assignors to Pohang Iron & Steel Co., Ltd. and Research Institute of Industrial Science & Technology, both of Pohong, Rep. of Korea

Filed Dec. 29, 1989, Ser. No. 459,152

Claims priority, application Rep. of Korea, Dec. 30, 1988, 88-17930

Int. Cl.[5] B32B *15/00*

U.S. Cl. 428—656 **6 Claims**



1. An Fe-Mn plated steel sheet, comprising a steel sheet;

a lower layer of Zn or Zn alloy electrodeposited on at least one surface of said steel sheet; and

an upper layer of Fe-Mn alloy with a manganese content of no more than 60 % by weight electrodeposited on said lower layer in an amount of at least 0.5 g/m^2.

5,082,749

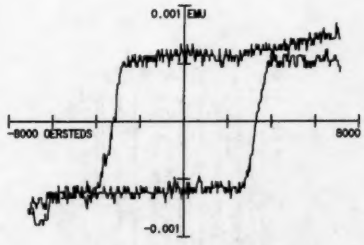
PLATINUM OR PALLADIUM/COBALT MULTILAYER ON A ZINC OXIDE OR INDIUM OXIDE LAYER FOR MAGNETO-OPTICAL RECORDING

Peter F. Carcia, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 494,207, Mar. 15, 1990, abandoned. This application Dec. 27, 1990, Ser. No. 634,791

Int. Cl.[5] G11B *5/66*

U.S. Cl. 428—694 **37 Claims**



1. A magneto-optical recording medium composed of a substrate, a base layer of zinc oxide or indium oxide sputtered onto said substrate and a multilayer recording film sputtered onto said base layer of zinc oxide or indium oxide, wherein said base layer of zinc oxide or indium oxide is from about 200 A to about 4500 A (about 20 nm to about 450 nm) thick, said multilayer recording film is a plantinum/cobalt multilayer film or a palladium/cobalt multilayer film consisting of alternating layers of platinum and cobalt or palladium and cobalt. wherein each of said palladium or plantinum layers has a thickness less than about 24 A and each of said cobalt layers has a thickness less than about 12 A, and said substrate is transparent to the radiation used to record and read, and the sputter gas used in

sputtering said multilayer film is argon, krypton, xenon or a mixture thereof.

5,082,750

MAGNETIC RECORDING MEDIUM OF THIN METAL FILM TYPE

Toshiaki Morichika, Hirakata; Toshio Tani, Takatsuki; Chiaki Sakai, Osaka; Hideo Koshimoto, Takatsuki, and Tatsuhiko Kadowaki, Ibaraki, all of Japan, assignors to Kubota Ltd., Kawasaki, Japan

Filed Oct. 20, 1989, Ser. No. 424,500

Claims priority, application Japan, Oct. 21, 1988, 63-266955; Jun. 9, 1989, 1-147640

Int. Cl.[5] G11B *23/00*

U.S. Cl. 428—694 **4 Claims**

1. A magnetic recording medium, adapted to be recorded in the longitudinal direction, and having a substantially lower noise level and substantially unimpaired, excellent magnetic properties, comprising:

a non-magnetic substrate;

a Ni-P film coated over a surface of said substrate;

a Cr film coated on said Ni-P film; and

a magnetic layer, having a composition of Co_{1-x-z} Cr_x Nb_z wherein each of x, y, and z represent the following atomic ratios: x is 0.12 to 0.15, and z is 0.03 to 0.10; wherein said Cr film layer is a ground layer for, and provides longitudinal anisotropy to, said magnetic medium; and wherein the amount of Nb is sufficient to vary the magnetic anisotropy of the crystals of said magnetic layer, to make said crystal grains finer, to concentrate said Cr at the boundaries of said crystal grains, to produce finer and substantially isolated magnetic domains in said magnetic layer, and to decrease the transition width of magnetization in said magnetic layer.

5,082,751

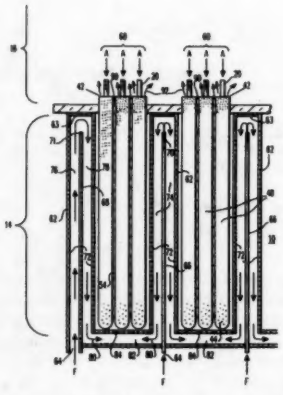
INTERNAL NATURAL GAS REFORMER-DIVIDERS FOR A SOLID OXIDE FUEL CELL GENERATOR CONFIGURATION

Philip Reichner, Plum Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 18, 1990, Ser. No. 599,531

Int. Cl.[5] H01M *8/10*

U.S. Cl. 429—19 **11 Claims**



1. A fuel cell generator configuration, comprising a plurality of electrically connected, axially elongated, fuel cells, each cell having an outer and inner electrode with solid oxide electrolyte therebetween; where elongated dividers separate and are positioned between fuel cells, and where at least one of the elongated dividers is hollow, the hollow divider having solid elongated walls, a reformable fuel mixture entrance, and an exit allowing passage of reformed fuel to the fuel cells, and where the cross-section of the divider contains a catalytic reforming material.

5,082,752

POWER GENERATION SYSTEM USING MOLTEN CARBONATE FUEL CELL

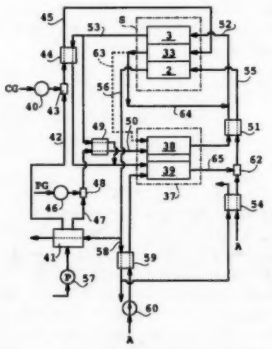
Minoru Koga, Kawasaki; Takenori Watanabe, Ichikawa; Toshio Kamata, Tokyo; Satoshi Morishima, Kashima; Minoru Mizusawa, and Kazunori Kobayashi, both of Yokohama, all of Japan, assignors to Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1990, Ser. No. 615,013

Claims priority, application Japan, Nov. 25, 1989, 1-305584

Int. Cl.[5] H01M *8/14*

U.S. Cl. 429—20 **7 Claims**



1. A power generation system using fuel cells, comprising:

a plurality of molten carbonate fuel cells, the fuel cells being stacked one after another via separators, each fuel cell having a cathode electrode, an anode electrode and a carbonate-soaked electrolyte tile sandwiched by the cathode and the anode electrodes, oxidant gas being fed to the cathode and fuel gas being fed to the anode;

cooling plates interposed between predetermined pairs of two adjacent fuel cells, each cooling plate directly contacting the adjacent fuel cells such that heat produced in the fuel cells is directly transferred to the cooling plates;

passages formed in each cooling plate for allowing raw-material-gas-for-reformation to flow through the passages;

reforming catalyst placed in the passages such that endothermic reactions take place in the passages as the raw-material-gas-for-reformation is reformed in the passages and whereby heat produced in the fuel cells is absorbed by the endothermic reaction in the cooling plates;

an external reformer provided outside of the fuel cell stack, the external reformer having a reforming section and a combustion section;

a stack-cooling-gas line connected to the passages of the cooling plates for introducing the raw-material-gas-for-the-reformation into the passages of the cooling plates;

a line for gas-for-processing connected to the reforming section of the external reformer for feeding raw-material-gas-for-processing to the reforming section;

an anode gas feed line for feeding to the anode reformed gas which has been reformed through the passages of the cooling plates and reformed gas which has been reformed by the reforming section of the external reformer;

an anode exit gas line for feeding anode exit gas to the combustion section of the external reformer;

a cathode gas feed line for feeding combustion exhaust gas discharged from the combustion section to the cathode with air; and

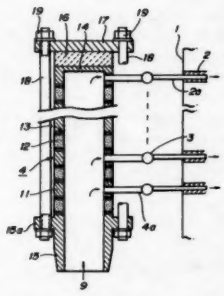
a cathode exit gas line for discharging the cathode exit gas.

5,082,753

COOLING DEVICE FOR FUEL CELL

Hiroshi Shimizu, and Yoshiaki Ozawa, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jul. 12, 1990, Ser. No. 551,828
Claims priority, application Japan, Jul. 19, 1989, 1-186956; Jan. 26, 1990, 2-17067
Int. Cl.[5] H01M 8/04
U.S. Cl. 429—26 2 Claims



1. A device for cooling a fuel cell including a cell stack and cooling plates disposed therein and having cooling pipes disposed in the cooling plates, with a cooling medium flowing through the cooling pipes, said device comprising:

main cooling pipes connected respectively to inlet and outlet ends of the cooling pipes through header pipes;

each of said main cooling pipes having a concentric stack of short metallic pipes and ring-shaped insulating spacers, said metallic pipes and said insulating spacers being alternately arranged;

studs fastening the stack of metallic pipes and insulating spacers of each said main cooling pipe together, thereby making said main cooling pipes liquid-tight; and

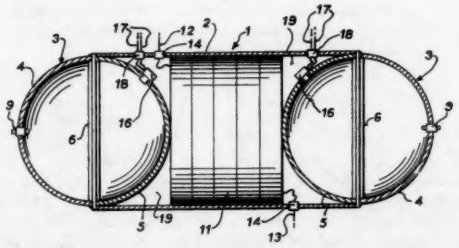
branch pipes connected to said metallic pipes and leading to the cooling plates.

5,082,754

PRESSURE VESSEL CONSTRUCTION FOR A METAL OXIDE-HYDROGEN BATTERY

Kenneth R. Jones, Oconomowoc, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed May 24, 1990, Ser. No. 528,876
Int. Cl.[5] H01M 12/08
U.S. Cl. 429—101 23 Claims



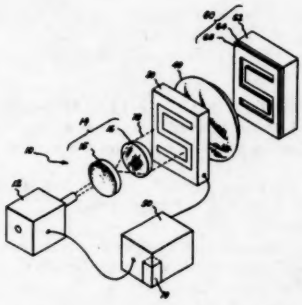
10. A metal oxide - hydrogen battery, a pair of sealed, spaced hollow members each containing pressurized hydrogen gas, a generally cylindrical section connecting said hollow members, a battery cell disposed in said cylindrical section, each hollow member having an opening providing communication between the interior of the hollow member and the cylindrical section, and valve means for opening and closing each opening whereby hydrogen gas can flow between the hollow members and said cylindrical section.

5,082,755

LIQUID CRYSTAL PROGRAMMABLE PHOTORESIST EXPOSURE METHOD FOR MAKING A SET OF MASKS

Yung S. Liu, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 415,693, Oct. 2, 1989, abandoned. This application Dec. 17, 1990, Ser. No. 629,084
Int. Cl.[5] G03F 9/00
U.S. Cl. 430—5 10 Claims



1. A method for making a set of masks which includes a plurality of isolated mask regions intended for sequential exposure of a surface of a block of material, said method comprising:

(a) providing a mask blank comprising a transmissive substrate, an opaque coating and a layer of photoresist over said coating;

(b) aligning said mask blank with respect to a liquid crystal shutter array with one of said plurality of mask regions aligned with said liquid crystal shutter array;

(c) rendering said liquid crystal shutter array optically transmissive in a pattern corresponding to the desired pattern for the particular mask region;

(d) exposing said photoresist layer to activating illumination through said liquid crystal shutter array;

(e) repeating steps b-d for each of the rest of said plurality of mask regions, with the desired pattern being different for at least some of said mask regions; and

(f) developing said photoresist and removing unprotected portions of said opaque coating from said substrate to provide said set of masks comprising a plurality of isolated mask regions.

5,082,756

PHOTOSENSITIVE MEMBER FOR RETAINING ELECTROSTATIC LATENT IMAGES

Isao Doi, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 15, 1990, Ser. No. 480,560
Claims priority, application Japan, Feb. 16, 1989, 1-037177; Jul. 27, 1989, 1-197096
Int. Cl.[5] G03G 5/147
U.S. Cl. 430—67 30 Claims

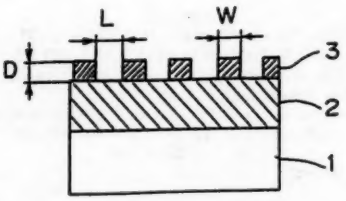
1. A photosensitive member for retaining electrostatic latent images, which comprises:

an electrically conductive substrate,

a photosensitive layer formed on the electrically conductive substrate and including a photoconductive material, and

electrically insulating and light-transmittable specks comprising inorganic material and distributed on the photo-

sensitive layer as a surface protective layer, the maximal width (W) of each speck if 200 μm or less, and the ratio



L/W of the distance (L) between each of the specks to the maximal width (W) is 1 or less.

5,082,757

ENCAPSULATED TONER COMPOSITIONS

Barkev Keoshkerian, Thornhill, and Beng S. Ong, Mississauga, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 31, 1990, Ser. No. 575,747
Int. Cl.[5] G03G *9/093*
U.S. Cl. 430—106 **51 Claims**

1. An encapsulated toner composition comprised of a core comprised of a polymer binder, pigment, dye, or mixtures thereof, and a hydroxylated polyurethane microcapsule shell derived from the polycondensation of a polyisocyanate and a water soluble carbohydrate.

14. A toner in accordance with claim **1** wherein the pigment is carbon black, magnetite, or mixtures thereof.

5,082,758

TONER AND DEVELOPER COMPOSITIONS WITH CHARGE ENHANCING ADDITIVES

Thomas R. Hoffend, Webster; Michelle M. Bruzee, Rochester, and Clifford O. Eddy, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 31, 1990, Ser. No. 575,691
Int. Cl.[5] G03G *9/097*
U.S. Cl. 430—110 **34 Claims**

1. A toner composition comprised of resin particles, pigment particles, and a tertiary amine hydrogen ammonium triflate charge enhancing additive.

5,082,759

LIQUID DEVELOPER FOR ELECTROSTATIC PHOTOGRAPHY

Eiichi Kato, and Kazuo Ishii, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

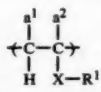
Filed Oct. 11, 1989, Ser. No. 421,570
Claims priority, application Japan, Oct. 12, 1988, 63-254785
Int. Cl.[5] G03G *9/13*
U.S. Cl. 430—114 **12 Claims**

1. A liquid developer for electrostatic photography resin particles dispersed in a non-aqueous solvent whose electrical resistance is at least 10^9 Ω·cm and whose dielectric constant is not more than 3.5, wherein said dispersed resin particles are obtained by polymerizing a solution containing

at least one monofunctional monomer (A) which is soluble in said non-aqueous solvent, but is rendered insoluble by polymerization and

at least one monomer (B) represented by general formula 9II) which has at least two polar groups and/or polar linking groups,

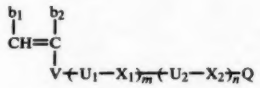
in the presence of a resin for dispersion stabilization purposes which has a polymerizable double bond containing group which can copolymerize with the monofunctional monomer (A) at only one end of the main chain of a polymer containing at least one repeating unit which can be represented by general formula (I):


(I)

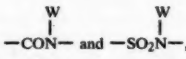
wherein X is selected from the group consisting of —COO—, —OCO—, —CH_2OCO—, —CH_2COO—, —O— and —SO_2—;

R^1 is an aliphatic group which has from 6 to 32 carbon atoms and which may be substituted; and

a^1 and a^2 which may be the same or different, each is selected from the group consisting of a hydrogen atom, a halogen atom, a cyano grup, a hydrocarbyl group which has from 1 to 8 carbon atoms, a —COO—R^2 group or a —COO—R^2 group linked via a hydocarbyl group which has from 1 to 9 carbon atoms where R^2 is a hydrocarbyl group which has from 1 to 22 carbon atoms:


(II)

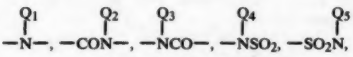
wherein V is selected from the group consisting of —COO—, —OCO—, —CH_2OCO—, —SO_2O, —CONH—, —SO_2NH—,



where W is a hydrocarbyl group or a grup which has the same meaning as the bond group —U_1—$X_1)_m$—U_2—$X_2)_n$ Q in general formula (II);

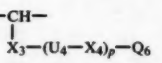
Q is selected from the group consisting of a hydrogen atom and a hydrocarbyl group which has from 1 to 18 carbon atoms and which may be substituted with halogen, —OH, —CN, —NH_2, —COOH, —SO_3H or —PO_3H_2;

X_1 and X_2 which may be the same or different, each is selected from the group consisting of —O—, —S—, —CO—, —CO_2—,



—NHO_2— and —NHCONH—, where Q_1, Q_2, Q_3, and Q_5 have the same significance as Q described above;

U_1 and U_2 which may be the same or different, each is a hydrocarbyl group which may be substituted and which may insert a



group into the bonds of the main chain, wherein X_3 and X_4 may be the same o different, having the same meaning as X_1 and X_2 described above, U_4 is a hydrocarbyl group which has from 1 to 18 carbon atoms which may be substituted, and Q_6 has the same meansing as Q described above;

b_1 and b_2 may be the same or different, each being selected from the group consisting of a hydrogen atom, a hydrocarbyl group, a —COO—L group and a —COO—L group linked via a hydrocarbyl group, where L is selected from the group constisting of a hydrogen atom and a hydrocarbyl group which may be substituted; and

m, n and p which may be the same or different, each is an integer value of from 0 to 4.

5,082,760

METHOD FOR PREPARING AN ELECTROPHOTOGRAPHIC PHOTORECEPTOR HAVING A CHARGE TRANSPORTING LAYER CONTAINING ALUMINUM OXIDE

Yuzuru Fukuda; Masayuki Nishikawa; Shigeru Yagi, and Kenichi Karakida, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 31, 1988, Ser. No. 264,748

Claims priority, application Japan, Nov. 10, 1987, 62-282236; Mar. 4, 1988, 63-49608

The portion of the term of this patent subsequent to Oct. 23, 2007, has been disclaimed.

Int. Cl.[5] G03G *15/02, 5/00*

U.S. Cl. 430—127 15 Claims

1. An electrophotographic photoreceptor, comprising

a substrate;

a charge generating layer overlying said substrate for generating charge carriers upon irradiation with light; and

a generally transparent charge transport layer, including aluminum oxide ion plate overlaying said charge generating layer, for receiving and transferring the charge carriers.

5,082,761

SET OF ELECTROPHOTOGRAPHIC TONERS

Shigeaki Tasaka; Nobuhiko Nakano, both of Yamatokoriyama; Kazuya Maeda, Yao; Toshihisa Ishida, Nara; Yoshiaki Takahashi, Ikoma; Tadashi Nakamura; Satoshi Yamaue, both of Nara, and Kumiko Nakamura, Sakurai, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 308,789, Feb. 10, 1989, abandoned. This application Nov. 26, 1990, Ser. No. 617,934

Claims priority, application Japan, Feb. 12, 1988, 63-31655; Dec. 29, 1988, 63-331008; Dec. 29, 1988, 63-331009

Int. Cl.[5] G03G *9/08*

U.S. Cl. 430—137 9 Claims

1. A method of supplying a set of electrophotographic toners used for electrophotographic machines, comprising the steps of supplying an initial supply toner and supplying a supplementary toner, both of which are composed of toner powder and additives adhering to the surface of said toner powder, wherein said additives include a cleaning agent, and the weight ratio x of additives to toner powder in said initial supply toner and the weight ratio y of said additives to said toner powder in said supplementary toner satisfy the relationship, $1.1y \leqq x \leqq 4.0y$ thereby preventing inversion of the cleaning blade in an initial stage of a copying process.

5,082,762

CHARGED PARTICLE BEAM EXPOSURE METHOD

Yasushi Takahashi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 23, 1989, Ser. No. 425,013

Claims priority, application Japan, Oct. 24, 1988, 63-267521

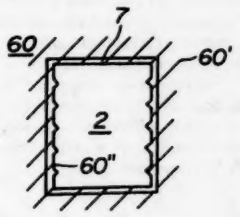
Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—296 20 Claims

1. A charged particle beam exposure method for selectively exposing a resist layer by use of a charged particle beam to form a desired pattern, said charged particle beam exposure method comprising the steps of:

repeatedly projecting a basic pattern segment using a charged particle beam so as to expose a pattern within a first predetermined region of the resist layer by a main exposure, said pattern within said first predetermined region being a multiple repetition of the basic pattern segment; and

exposing a second predetermined region of the layer using an auxiliary exposure at a lower intensity level than that of said main exposure, said second predetermined region excluding the central portions of said first predetermined



region and including marginal portions wherein the proximity effect occurs due to said main exposure.

5,082,763

HEAT DEVELOPABLE PHOTOSENSITIVE MATERIAL

Tetsuro Kojima, and Tomoyuki Koide, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

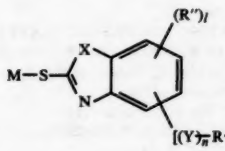
Continuation of Ser. No. 389,389, Aug. 4, 1989, abandoned. This application Mar. 5, 1991, Ser. No. 664,506

Claims priority, application Japan, Aug. 5, 1988, 63-195776

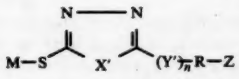
Int. Cl.[5] G03C *5/54, 1/34*

U.S. Cl. 430—353 22 Claims

1. An image forming method which comprises the steps of: imagewise exposing a heat developable photosensitive material which comprises a support having thereon at least one photosensitive silver halide, a reducing agent, a binder, and a compound represented by the general formula (I) or (II) in the same layer or in separate layers:

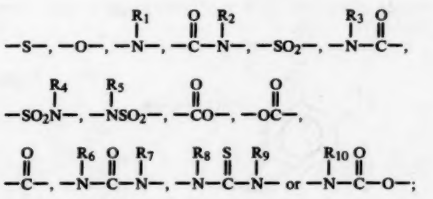


(I)

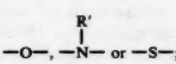


(II)

wherein R represents a substituted or unsubstituted alkylene group; Y represents

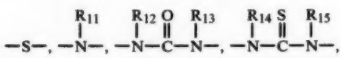


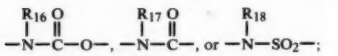
R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8, R_9 and R_{10} each represents a hydrogen atom, or a substituted or unsubstituted alkyl, aryl, alkenyl or aralkyl group; X represents



R' represents a hydrogen atom, or a substituted or unsubstituted alkyl or alkenyl group; R'' represents a hydrogen atom, or a substitutive group therefor; M represents a

hydrogen atom, an alkali metal ion, an ammonium group, or a group capable of being cleaved under alkaline condition; n represents 0 or 1; m represents 1 or 2; l represents 4-m, Z in formula (I) represents a methoxy or ethoxy group or a substituted or unsubstituted amino, quaternary ammonium, sulfonyl, carbamoyl, sulfamoyl, carbonamido, sulfonamido, ureido, alkylthio, or heterocyclic group; Z in formula (II) represents a substituted or unsubstituted amino, quaternary ammonium, sulfonyl, carbamoyl, sulfamoyl, carbonamido, sulfonamido, ureido, alkylthio, alkoxy or heterocyclic group: X' represents —O—, —S—, Or —NH—; Y' represents





R_{11}, R_{12}, R_{13}, R_{14}, R_{15}, R_{16}, R_{17} and R_{18} each has the same meaning as R_1 to R_{10};

and heat developing the exposed photosensitive material in the presence of a solvent in an amount less than the weight of that solvent having a volume equivalent to the maximum swelling volume of all of the layers coated.

5,082,764

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL AND METHOD FOR FORMING COLOR IMAGE

Osamu Takahashi, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 26, 1990, Ser. No. 603,613

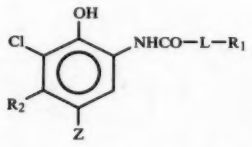
Claims priority, application Japan, Oct. 30, 1989, 1-282318

Int. Cl.[5] G03C *7/36*

U.S. Cl. 430—377 **19 Claims**

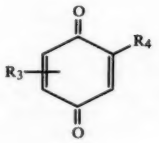
1. A silver halide color photographic material having photographic constitutional layers that include at least one silver halide emulsion layer on a base, comprising in at least one of said silver halide emulsion layer silver halide grains having a silver chloride content of 90 mol% or over and an emulsified dispersion containing lipophilic fine particles with an average particle diameter in the range of 0.18 μm to 0.35 μm that include at least one cyan dye-forming coupler represented by formula (I):

Formula (I)

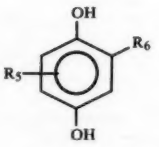


wherein R_1 represents an alkyl group having at least 7 carbon atoms, R_2 represents an alkyl group having 1 to 15 carbon atoms, L represents a mere bonding line or a bivalent linking group, and Z represents a hydrogen atom or a group or an atom capable of being released at the time of coupling with a developing agent, at least one high-boiling organic solvent having a viscosity of 200 cp or over at 25° C., and at least one compound selected from the group consisting of diffusion-resistant compounds represented by formulae (II) and (III):

Formula (II)



Formula (III)



wherein R_3, R_4, R_5, and R_6 each represent a hydrogen atom, a halogen atom, or a chain, cyclic, or branched alkyl, alkyloxy, or alkylthio group, provided that R_3 and R_4 and/or R_5 and R_6 do not simultaneously represent a hydrogen atom and/or a halogen atom respectively, and of alkyl groups represented by R_3 to R_6, an alkyl group whose root carbon is a tertiary carbon atom are excluded.

19. A method for forming an image, which comprises after exposing photographic material as claimed in claim **1** to light image-wise, subjecting the silver halide photographic material to color-development with a color developer substantially free from benzyl alcohol and then treating it with a bleach-fix solution having a pH of 6.3 or below.

5,082,765

METHOD OF PROCESSING LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Kaoru Onodera, Odawara; Keiji Ohbayashi, Hino; Mitsuhiro Okumura, Hino, and Shigeo Chino, Hino, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 402,982, Sep. 1, 1989, abandoned, which is a continuation of Ser. No. 303,967, Jan. 27, 1989, abandoned, which is a continuation of Ser. No. 33,506, Apr. 1, 1987, abandoned. This application Oct. 15, 1990, Ser. No. 598,798

Claims priority, application Japan, Apr. 4, 1986, 61-78891

The portion of the term of this patent subsequent to Oct. 16, 2007, has been disclaimed.

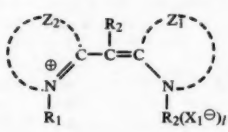
Int. Cl.[5] G03C *7/46, 1/16*

U.S. Cl. 430—377 **9 Claims**

1. An improved method for reducing color stain and contamination in light-sensitive silver halide color photographic materials developed using rapid processing means, said photographic materials comprising a support having provided thereon at least one blue-sensitive silver halide emulsion layer containing a dye forming coupler and silver halide grains, said improvement comprising;

sensitizing said blue-sensitive silver halide emulsion layer with a sensitizing dye represented by Formula (I)

Formula (I)

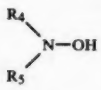


wherein

Z_1 and Z_2 represent independently a group of atoms necessary to form a heterocyclic ring selected from the group consisting of thiazole, benzothiazole, naphthothiazole, selenazole, benzoselenazole, and naphthoselenazole with a proviso that when Z_1 is naphthothiazole, Z_2 is not naphthothiazole, and when Z_1 is naphthoselenazole, Z_2 is not naphthoselenazole; R_1 and R_2 represent

independently alkyl, alkenyl, and aryl; R_3 represents hydrogen, methyl or ethyl; X_1 represents an anion; and l is 0 or 1; and

processing the photographic material, after exposure, with a developing solution containing an aromatic primary amine color developing agent, and at least one compound represented by Formula (II), or water soluble acid salt thereof;



Formula (II)

wherein R_4 and R_5 represent independently an alkyl group having 1 to 4 carbon atoms.

5,082,766

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Toyoki Nishijima, Odawara; Masaki Tanji, Odawara; Noboru Mizukura, Tokyo, and Shuichi Sugita, both of Tokyo, all of Japan, assignors to Konica Corporation, Tokyo, Japan

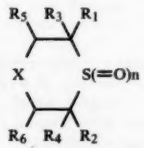
Filed May 1, 1990, Ser. No. 517,361

Claims priority, application Japan, May 8, 1989, 1-115860; Dec. 6, 1989, 1-317060

Int. Cl.[5] G03C *1/34, 7/38*

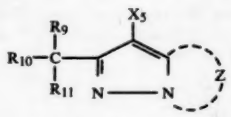
U.S. Cl. 430—551 **14 Claims**

1. A silver halide photographic light-sensitive material comprising a support having thereon a green-sensitive silver halide emulsion layer containing a compound T represented by the following and a magenta coupler M-I represented by the following formulas:



(T)

wherein each of R_1 and R_2 is a hydrogen atom or an alkyl group; each of R_3 and R_4 is a hydrogen atom, an alkyl group, an aryl grup, or a heterocyclic grup; each of R_5 and R_6 is a hydrogen atom, an alkyl group, an aryl grup, an acyl group, or an alkoxycarbonyl grup; X is a divalent group including a carbon atom as the component of the 6-member ring of formula T; and n is an integer of zero, 1 to 2; and



M-I

wherein each of R_9 and R_{10} is an alkyl grup, and R_{11} is a hydrogen atom or a substituent; Z is a group of non-metal atoms necessary to form a nitrogen-containing heterocyclic ring; Xs is a hydrogen atom or a substituent capable of splitting off upon reaction with the oxidation product of a color developing agent.

5,082,767

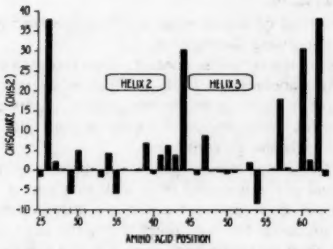
CODON PAIR UTILIZATION

G. Wesley Hatfield, 718 Goldenrod, Corona Del Mar, Calif. 92625, and George A. Gutman, 3080 Tyler Way, Costa Mesa, Calif. 92626

Filed Feb. 27, 1989, Ser. No. 316,321

Int. Cl.[5] C12Q *1/68*

U.S. Cl. 435—6 **44 Claims**



1. A method for determining relative native codon pairing preferences in an organism, comprising the steps of:

obtaining nucleotide sequence data for said organism;

determining from said data the number of codons represented in at least a portion of said sequence and the frequency of usage of at least some individual codons in said portion;

determining from said individual codon frequencies the expected number of occurrences of at least some codon pairs, if said codons are paired in a radon manner;

comparing the expected number with the actual number of occurrences to determine said relative condon pairing preferences;

determining preferred amino acid pairings of said organism and eliminating any amino acid pair bias prior to determining said codon pairing preferences; and

altering a gene for expression in said organism by substituting at least one codon for an existing codon in said gene to alter codon pairing in accordance with said codon pairing preferences to change the translational kinetics of said gene in a predetermined manner.

5,082,768

ATTENUATOR TO SUPPRESS EXTRANEOUS LIGHT IN LUMINESCENT SPECIFIC-BINDING ASSAYS

John F. Burd, Mountain View; John W. Dyminski, San Jose, and Vincent A. Marinkovich, Palo Alto, all of Calif., assignors to Mast Immunosystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 621,200, Jun. 15, 1984, abandoned. This application Dec. 28, 1990, Ser. No. 639,302

Int. Cl.[5] G01N *33/535*

U.S. Cl. 435—7.92 **22 Claims**

1. A reagent medium for use in a liquid phase specific-binding chemiluminescent assay wherein extraneous light is produced, comprising:

at least one component of a chemiluminescent reaction; and

an attenuator compound which absorbs light over a spectrum or wavelengths, wherein said spectrum includes the wavelength of said extraneous light, said compound being present in a concentration sufficient to suppress said extraneous light.

5,082,769

AQUEOUS SOLUTION OF TRIGLYCERIDE SUBSTRATE FOR DETERMINATION OF LIPASE

Iyoko Miki, Funabashi; Hiroyuki Tsubota, Chiba; Toshio Tsuchiko, and Hisashi Ochi, both of Funabashi, all of Japan, assignors to Iatron Laboratories, Inc., Tokyo, Japan

Filed Jul. 28, 1988, Ser. No. 225,345

Claims priority, application Japan, Apr. 15, 1988, 63-91688

Int. Cl.[5] C12Q *1/44, 1/34;* **G01N** *33/92*

U.S. Cl. 435—19 **3 Claims**

2. A method of determining human pancreatic lipase in a sample, comprising the steps of:

(1) placing the sample in contact with a transparent aqueous solution containing a triglyceride as substrate in the presence of an agent for accelerating lipase activity and monoglyceride lipase to hydrolyze the triglyceride to liberate fatty acids and glycerol; and

(2) determining human pancreatic lipase by measuring amount of the liberated fatty acids or glycerol,

wherein the transparent aqueous solution containing the triglyceride has been prepared by the steps of:

(a) adding the triglyceride to an aqueous solution containing a nonionic surfactant to form a mixture;

(b) adding a builder, selected from the group consisting of a salt of an inorganic acid and a salt of an organic acid, to the mixture to lower the cloud point of the nonionic surfactant-containing aqueous solution to about room temperature; and

(c) diluting the mixture with water or an aqueous buffer solution while stirring to form a transparent solution.

5,082,770

METHOD FOR QUANTITATIVE DETERMINATION OF POLYAMINES

Masato Okada, Yokohama, and Makoto Sakamoto, Fujisawa, both of Japan, assignors to Tokuyama Soda Co., Ltd., Tokuyama, Japan

Filed Apr. 4, 1988, Ser. No. 176,885

Claims priority, application Japan, Apr. 4, 1987, 62-82206; Apr. 20, 1987, 62-95218

Int. Cl.[5] C12Q *1/32, 1/26;* **C12N** *9/04*

U.S. Cl. 435—26 **27 Claims**

24. A colorimetric method for the quantitive determiniation of polyamines in a body fluid comprising:

A. reacting a sample body fluid with 0.1 to 50 units of polyamine oxidizing enzyme, 0.1 to 50 uinits of an ω-aminoalkylaldehyde dehydrogenase and oxidized nicotinamide coenzyme and converting any conjugated polyamines which may be present to free polyamines by using acylpolyamine amidohydrolase;

B. adding 0.01 to 50 mM of a dye selected from the group consisting of tetrazolium salts, and an electron carrier selected from the group consisting of diaphorase and 1-methoxy-5-methyl phenazinium methyl sulfate in the presence of 0.3% to 10% by weight of a nonionic surfactant at a pH in the range of about 4 to 7; and

C. measuring the absrobance at about 530 nm of the test solution as compared with a standard solution containing a known amount of a polyamine.

5,082,771

DETECTING CELLS USING TELLURAPYRYLIUM DIHYDROXIDES

Michael R. Detty, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

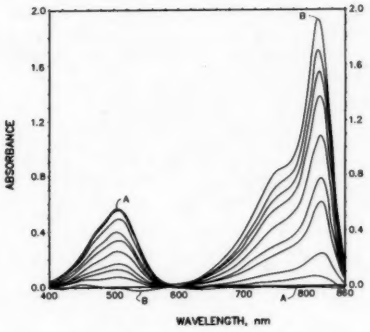
Filed Jun. 27, 1989, Ser. No. 371,958

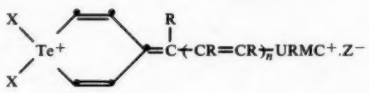
Int. Cl.[5] C12Q *1/10*

U.S. Cl. 435—38 **1 Claim**

1. A process for the detection of biological cells or biological reductants in a sample suspected of containing such cells or reductants, said process comprising:

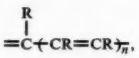
(A) reacting said sample with a tellurapyrylium dihydroxide (TPDH) having the formula:





(A)

wherein the tellurium atom is in the +4 oxidation state, each X is hydroxyl, each R is independently selected from hydrogen and alkyl and aryl radicals having up to about 10 carbon atoms, n is equal to zero, one or two, Z is a counterion, and URMC is an unsaturated ring moiety having two or three unsaturated bonds in conjugated relationship with the unsaturation in the bridge



thereby producing a reduction product in which the said hydroxyl groups are no longer bonded to the tellurium atom and said atom is in the +2 oxidation state, said reduction product having an absorbance maximum in the visible light region more toward the near infrared zone than the absorption maximum in said region for said TPDH;

(b) accelerating reduction of compound (A) by irradiating with light at about 480 nm in the presence of a protein having histidine or tryptophan as a component; and

(C) sensing the change in absorbance in the region of the absorbance maximum of said reduction product.

5,082,772

PROCESS FOR PREPARING DEACETYLCEPHALOSPORIN C

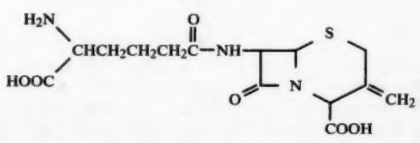
Joe E. Dotzlaf, and Wu-Kuang Yeh, both of Greenwood, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 24, 1988, Ser. No. 261,437

Int. Cl.[5] C12P *35/06;* **C12N** *9/02, 9/86/1/00*

U.S. Cl. 435—49 **5 Claims**

1. A process for preparing deacetylcephalosporin C which comprises contacting in the presence of oxygen, 3-exomethylenecephalosporin C of the formula



at a temperature between about 30° C. and about 40° C. in an

aqueous medium containing ferrous ion and α-ketoglutarate at a pH between about 6.8 and about 7.6 with *Streptomyces clavuligerus* derived deacetoxycephalosporin C synthase.

5,082,773

CLONED STREPTOCOCCAL GENES ENCODING PROTEIN G AND THEIR USE TO CONSTRUCT RECOMBINANT MICROORGANISMS TO PRODUCE PROTEIN G

Stephen R. Fahnestock, Olney, Md., assignor to Pharmacia LKB Biotechnology AB, Sweden

Continuation-in-part of Ser. No. 854,887, Apr. 23, 1986, abandoned, which is a continuation-in-part of Ser. No. 829,354, Feb. 14, 1986, abandoned. This application Jun. 19, 1987, Ser. No. 63,959

Int. Cl.[5] C12P *21/02;* **C12N** *1/21, 15/63, 15/75*

U.S. Cl. 435—69.1 **21 Claims**

1. A method for producing a protein with the immunoglobulin binding specificity of protein G which comprises cultivating in an aqueous nutrient medium under protein-producing conditions, a prokaryotic host transformed by a vector which comprises a nucleotide sequence encoding a protein having the immunoglobulin binding specificity of protein G, with the proviso that said prokaryotic host is *E. coli* or *B. subtillis;*

wherein when an *E. coli* host strain is transformed with said nucleotide sequence, said strain is propagatable in the absence of a cryptic helper plasmid,

said vector further comprising expression signals which are recognized by said prokaryotic host and which direct the expression of said nucleotide sequence; and

recovering the protein so produced.

5,082,774

RECOMBINANT HUMAN NERVE GROWTH FACTOR

Gerhard Heinrich, Acton, Mass., assignor to The General Hospital Corporation, Boston, Mass.

Filed Aug. 30, 1988, Ser. No. 238,368

Int. Cl.[5] C12N *21/06, 15/00, 5/00*

U.S. Cl. 435—69.1 **9 Claims**

1. A vector capable of replicating in a mammalian cell, said vector comprising a human prepro-NGF encoding DNA sequence consisting essentially of the coding region of exon 4 of the human NGF gene and regulator DNA operationally associated with and capable of effecting the expression of said human prepro-NGF encoding DNA sequence, said vector being capable of expressing biologically active recombinant human NGF in said mammalian cell.

5,082,775

EFFICIENT PROCESS FOR ISOLATING INSOLUBLE HETEROLOGOUS PROTEIN USING NON-IONIC DETERGENTS

Michael T. McCaman, San Bruno, and John F. King, San Francisco, both of Calif., assignors to Berlex Laboratories, Inc., Cedar Knolls, N.J.

Continuation-in-part of Ser. No. 856,700, Apr. 28, 1986, which is a continuation-in-part of Ser. No. 480,860, Mar. 31, 1983, abandoned, and a continuation-in-part of Ser. No. 940,199, Dec. 12, 1986, which is a continuation-in-part of Ser. No. 609,495, May 11, 1984, abandoned. This application Oct. 28, 1988, Ser. No. 263,927

Int. Cl.[5] C12N *1/21, 15/00, 9/64, 9/80;* **C12P** *21/00;* **A61K** *37/54;* **C07K** *7/00*

U.S. Cl. 435—69.7 **5 Claims**

1. A process for isolating a heterologous polypeptide produced as an inclusion body in transforming bacteria wherein the improvement

a) lysing said transformed bacteria containing said polypeptide to form a lysate;

b) contacting said lysate with a solution containing a weight excess of a non-ionic detergent sufficient to maintain said polypeptide in an insoluble state and solubilizing the cellular debris; and,

c) separating the insoluble polypeptide from the soluble debris.

5,082,776

METHOD OF PRODUCING AN ADULT T CELL LEUKEMIA VIRUS FUSED ANTIGEN POLYPEPTIDE

Tetsuro Kuga; Susumu Sekine, both of Machida, and Seiga Itoh, Sagamihara, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 896,734, Aug. 15, 1986, Pat. No. 4,939,094. This application Jan. 31, 1990, Ser. No. 473,033

Claims priority, application Japan, Aug. 28, 1985, 60-188868

Int. Cl.[5] C12P *21/02;* **C12N** *15/62, 15/48*

U.S. Cl. 435—69.7 **4 Claims**

1. A process for producing a hybrid antigen polypeptide having the amino acid sequence:

MetAspProTrpGlnMetLysAspLeuGlnAlaIleLysGlnGluVal-SerGlnAlaAla ProGlySerProGlnPheMetGlnThrIleArgLeuAlaValGlnGlnPheAspProThr AlaLysAspLeuGlnAspLeuLeuGlnTyrLeuCysSerSerLeuValAlaSerLeuHis HisGlnGlnLeuAspSerLeuIleSerGluAlaGluThrArg-GlyIleThrGlyTyrAsn ProLeuAlaGlyProLeuArgValGlnAlaAsnAsnProGlnGlnGlnGlyLeuArgArg GluTyrGlnGlnLeuTrpLeuAlaAlaPheAlaAlaLeuProGlySerAlaLysAsp-Pro SerTrpAlaSerIleLeuGlnGlyThrLeuGlnSerThrAsn-TyrThrCysIleValCys IleAspArgAlaSerLeuSerThrTrpHis-ValLeuTyrSerProAsnValSerValPro SerSerSerSerThr-ProLeuLeuTyrProSerLeuAlaLeuProAlaProHisLeuThr LeuProPheAsnTrpThrHisCysPheAspProGlnIleGlnAlaIleValSerSerPro CysHisAsnSerLeuIleLeuProPro-PheSerLeuSerProValProThrLeuGlySer ArgSerArgArgAlaValProLys,

which comprises culturing a microorganism carrying a replicable recombinant plasmid having an operative DNA fragment coding for said polypeptide in a culture medium until recoverable amounts of said polypeptide are produced and thereafter recovering said polypeptide therefrom.

5,082,777

PROCESS FOR THE PRODUCTION OF 6-HYDROXYNICOTINIC ACID

Pavel Lehky, Naters; Hans Kulla, and Stephane Mischler, both of Visp, all of Switzerland, assignors to Lonza Ltd., Switzerland

Filed Feb. 14, 1985, Ser. No. 701,507

Claims priority, application Switzerland, Feb. 21, 1984, 825/84

The portion of the term of this patent subsequent to Apr. 19, 2005, has been disclaimed.

Int. Cl.[5] C12P *17/12;* **C12N** *1/20;* **H01R** *13/24, 4/48*

U.S. Cl. 435—122 **8 Claims**

1. A biologically pure culture of *Achromobacter xylosoxydans* DSM 2783, which is capable of specific enzymatic hydroxylation of nicotinic acid to 6-hydroxynicotinic acid.

2. Process for the production of 6-hydroxynicotinic acid comprising enzymatically hydroxylating nicotinic acid in an aqueous medium containing *Achromobacter xylosoxydans* DSM 2783 to 6-hydroxynicotinic acid at a pH and a temperature which are effective to achieve such enzymatic hydroxylation, the concentration of the nicotinic acid in the aqueous admixture being such that is effective to substantially prevent the enzymatic conversion of the 6-hydroxynicotinic acid.

5,082,778

PRODUCTION OF GUAR ALPHA-GALACTOSIDASE BY HOSTS TRANSFORMED WITH RECOMBINANT DNA. METHODS

Nicolaas Overbeeke, Maasland; Arthur J. Fellinger, Hoogvliet, both of Netherlands, and Stephen G. Hughes, Chelveston, Great Britain, assignors to Unilever Patent Holdings B.V., Rotterdam, Netherlands

PCT No. PCT/EP87/00296, § 371 Date Feb. 2, 1988, § 102(e) Date Feb. 2, 1988

PCT Filed Jun. 2, 1987, Ser. No. 165,995

Claims priority, application European Pat. Off., Jun. 3, 1986, 86200975.0; United Kingdom, Dec. 18, 1986, 8630255; Dec. 23, 1986, 8630719; Apr. 29, 1987, 8710139; May 11, 1987, 8711061; European Pat. Off., May 20, 1987, 87200955.0; United Kingdom, May 26, 1987, 8712318

Int. Cl.[5] C12N *9/40, 1/16, 1/18*

U.S. Cl. 435—172.3 16 Claims

1. An expression system comprising:

i) a vector, and

ii) a nucleotide sequence encoding a mature protein both having α-galactosidase activity and being capable of decreasing the galactose content of galactomannans by splitting off 1–6 linked α-D-galactopyranosyl units attached to a main chain of 1–4 linked β-D-mannopyranosyl units, or a precursor of such a protein, wherein said precursor is a pre- form of the protein a prepro- form of the protein, or a fusion form of the protein which upon cleavage results in the mature protein,

wherein said sequence is sufficiently complementary to the complement of the sequence shown in FIG. 6 to hybridize herewith,

wherein said nucleotide sequence is operably linked to a regulatory sequence present in said vector, which regulatory sequence facilitates expression of said nucleotide sequence.

5,082,779

METHOD OF DIRECTING TRANSGENIC EXPRESSION IN ANIMALS USING A PROLACTIN PROMOTER

Fritz Rottman, Pepper Pike, and Sherron Helms, University Hghts., both of Ohio, assignors to Edison Animal Biotechnology Center/Ohio University, Athens, Ohio

Filed Aug. 6, 1987, Ser. No. 82,243

Int. Cl.[5] C12N *15/00;* C12P *21/00*

U.S. Cl. 435—172.3 9 Claims

1. A method of producing a mammal capable of expressing a non-prolactin gene said expression occurring essentially only after birth and essentially only in the pituitary cells of said mammal, which comprises (a) operably linking said gene to a developmentally specific prolactin promoter to form a transcriptional unit and (b) introducing said unit into one or more cells of said mammal at the embryonic stage or of an ancestor of said mammal at the embryonic stage.

5,082,780

OLIGONUCLEOTIDE-ENZYME CONJUGATE THAT CAN BE USED AS A PROBE IN HYBRIDIZATION ASSAYS AND POLYMERASE CHAIN REACTION PROCEDURES

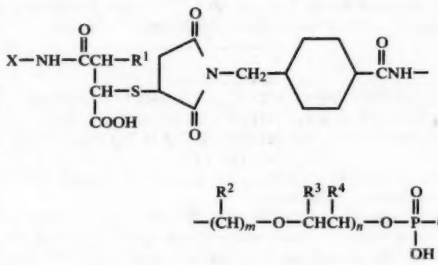
Harold C. Warren, III, Rush, and Fred T. Oakes, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 12, 1989, Ser. No. 406,224

Int. Cl.[5] C12N *9/06, 9/04;* C07D *207/12, 207/40*

U.S. Cl. 435—191 4 Claims

1. A covalent conjugate of an enzyme and an oligonucleotide having the structure:



wherein X—NH— represents an enzyme having a reactive amino group from which a hydrogen atom has been removed,

R^1, R^2, R^3 and R^4 are independently hydrogen, alkyl of 1 to 3 carbon atoms or hydroxyalkyl of 1 to 3 carbon atoms,

m is a positive integer of 2 to 12,

n is a positive integer of 1 to 50, and

represents an oligonucleotide chain from which a hydroxy group has been removed from the terminal phosphate at the 3′ or 5′ end thereof.

5,082,781

β-AMYLASE GENE

Hideo Yamagata; Noriyuki Kitamoto, both of Nagoya; Takeo Kato, Aichi; Norihiro Tsukagoshi, and Shigezo Udaka, both of Nagoya, all of Japan, assignors to Shigezo Udaka, Nagoya, Japan

Continuation of Ser. No. 315,129, Feb. 24, 1989, abandoned. This application Nov. 9, 1990, Ser. No. 611,480

Claims priority, application Japan, Feb. 26, 1988, 63-43708

Int. Cl.[5] C12N *9/26, 15/56, 15/75, 1/21, 1/00*

U.S. Cl. 435—201 19 Claims

1. A recombinant gene coding for a thermostable β-amylase having the following amino acid sequence:

654 677
Ser Ile Ala Pro Asn Phe Lys Val

*678
Phe Val Met Gly Pro Leu Glu Lys Val Thr

737*
Asp Phe Asn Ala Phe Lys Asp Gln Leu Ile

*738
Thr Leu Lys Asn Asn Gly Val Tyr Gly Ile

797*
Thr Thr Asp Ile Trp Trp Gly Tyr Val Glu

*798
Asn Ala Gly Glu Asn Gln Phe Asp Trp Ser

857*
Tyr Tyr Lys Thr Tyr Ala Asp Thr Val Arg

*858
Ala Ala Gly Leu Lys Trp Val Pro Ile Met

917*
Ser Thr His Ala Cys Gly Gly Asn Val Gly

*918
Asp Thr Val Asn Ile Pro Ile Pro Ser Trp

-continued

977*
Val Trp Thr Lys Asp Thr Gln Asp Asn Met

*978
Gln Tyr Lys Asp Glu Ala Gly Asn Trp Asp

1037*
Asn Glu Ala Val Ser Pro Trp Tyr Ser Gly

*1038
Leu Thr Gln Leu Tyr Asn Glu Phe Tyr Ser

1097*
Ser Phe Ala Ser Asn Phe Ser Ser Tyr Lys

*1098
Asp Ile Ile Thr Lys Ile Tyr Ile Ser Gly

1157*
Gly Pro Ser Gly Glu Leu Arg Tyr Pro Ser

*1158
Tyr Asn Pro Ser His Gly Trp Thr Tyr Pro

1217*
Gly Arg Gly Ser Leu Gln Cys Tyr Ser Lys

*1218
Ala Ala Ile Thr Ser Phe Gln Asn Ala Met

1277*
Lys Ser Lys Tyr Gly Thr Ile Ala Ala Val

*1278
Asn Ser Ala Trp Gly Thr Ser Leu Thr Asp

1337*
Phe Ser Gln Ile Ser Pro Pro Thr Asp Gly

1338*
Asp Asn Phe Phe Thr Asn Gly Tyr Lys Thr

1397*
Thr Tyr Gly Asn Asp Phe Leu Thr Trp Tyr

*1398
Gln Ser Val Leu Thr Asn Glu Leu Ala Asn

1457*
Ile Ala Ser Val Ala His Ser Cys Phe Asp

*1458
Pro Val Phe Asn Val Pro Ile Gly Ala Lys

1517*
Ile Ala Gly Val His Trp Leu Tyr Asn Ser

*1518
Pro Thr Met Pro His Ala Ala Glu Tyr Cys

1577*
Ala Gly Tyr Tyr Asn Tyr Ser Thr Leu Leu

*1578
Asp Gln Phe Lys Ala Ser Asn Leu Ala Met

1637*
Thr Phe Thr Cys Leu Glu Met Asp Asp Ser

*1638
Asn Ala Tyr Val Ser Pro Tyr Tyr Ser Ala

1697*
Pro Met Thr Leu Val His Tyr Val Ala Asn

*1698
Leu Ala Asn Asn Lys Gly Ile Val His Asn

1757*
Gly Glu Asn Ala Leu Ala Ile Ser Asn Asn

-continued

*1758
Asn Gln Ala Tyr Val Asn Cys Ala Asn Glu

1817*
Leu Thr Gly Tyr Asn Phe Ser Gly Phe Thr

*1818
Leu Leu Arg Leu Ser Asn Ile Val Asn Ser

1877*
Asp Gly Ser Val Thr Ser Glu Met Ala Pro

*1878
Phe Val Ile Asn Ile Val Thr Leu Thr Pro

1937*
Asn Gly Thr Ile Pro Val Thr Phe Thr Ile

*1938
Asn Asn Ala Thr Thr Tyr Tyr Gly Gln Asn

1997*
Val Tyr Ile Val Gly Ser Thr Ser Asp Leu

*1998
Gly Asn Trp Asn Thr Thr Tyr Ala Arg Gly

2057*
Pro Ala Ser Cys Pro Asn Tyr Pro Thr Trp

*2058
Thr Ile Thr Leu Asn Leu Leu Pro Gly Glu

2117*
Gln Ile Gln Phe Lys Ala Val Lys Ile Asp

*2118
Ser Ser Gly Asn Val Thr Trp Glu Gly Gly

2177*
Ser Asn His Thr Tyr Thr Val Pro Thr Ser

*2178
Gly Thr Gly Ser Val Thr Ile Thr Trp Gln.

5,082,782

PRODUCTION OF HORSESHOE CRAB AMEBOCYTES IN VITRO

Daniel G. Gibson, III, Teaticket, and Joan B. Hilly, Uxbridge, both of Mass., assignors to Worcester Polytechnic Institute, Worcester, Mass.

Filed Dec. 27, 1988, Ser. No. 290,160
Int. Cl.[5] C12N *5/00*
U.S. Cl. 435—240.2 **4 Claims**

1. A method for producing a horseshoe crab lysate comprising:

providing excised gill flap tissues from a horseshoe crab selected from the group consisting of *Limulus polyphemus, Tachypleus tridentatus, Tachypleus gigas,* and *Carcinoscorpius rotundicauda,*

opening the gill flap tissues,

culturing the gill flap tissues in a culture medium,

harvesting the amebocytes, and

lysing the amebocytes.

5,082,783

ENHANCED SECRETION OF HETEROLOGOUS PROTEINS BY HOSTS USING SUBSTITUTED PROMOTERS

Joachim F. Ernst, Veyrier, and Ursula Schmeissner, Geneva, both of Switzerland, assignors to Biogen, Inc., Cambridge, Mass.

Continuation of Ser. No. 827,432, Feb. 10, 1986, abandoned. This application Dec. 18, 1989, Ser. No. 452,632

Claims priority, application United Kingdom, Nov. 25, 1985, 8529014

Int. Cl.[5] C07H *15/12;* **C12P** *21/00;* **C12N** *1/16*

U.S. Cl. 435—69.1 **14 Claims**

1. A DNA sequence comprising:

(a) a yeast promoter selected from the group consisting of the ACT and CYC1 promoters, and

(b) a heterologous yeast secretion signal sequence operatively linked to said promoter.

5,082,784

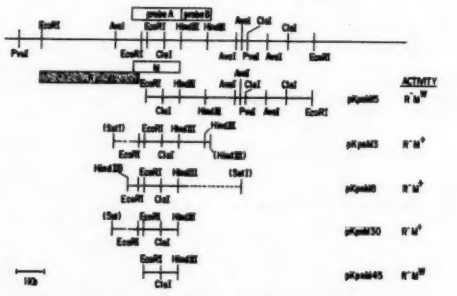
CLONED KPNI RESTRICTION-MODIFICATION SYSTEM

Deb K. Chatterjee, and Alan W. Hammond, both of Gaithersburg, Md., assignors to Life Technologies, Inc., Gaithersburg, Md.

Filed Mar. 20, 1990, Ser. No. 496,283

Int. Cl.[5] C12N *1/21, 15/70, 15/55;* **C07H** *19/10*

U.S. Cl. 435—252.3 **5 Claims**



1. A recombinant DNA molecule comprising a structural gene encoding a restriction endonuclease which recognizes the palindromic sequence:

5′ G GTAC C 3′

3′ C CATG G 5′

wherein said endonuclease cleaves said sequence between the C residues, producing a four base 3′ extension.

5,082,785

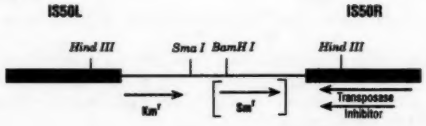
BIOSYNTHESIS OF 2 KETO-L-GULONIC ACID

Ronald F. Manning, Livingston, N.J., and Maria S. Kahn, Seattle, Wash., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 30, 1987, Ser. No. 8,993

Int. Cl.[5] C12N *1/21, 15/00;* **C12P** *7/60, 7/58*

U.S. Cl. 435—252.32 **3 Claims**



Tn5 (5.7 kb)

1. A gluconobacter transformed with Tn5 which inactivates the 2-keto-L-Gulonic acid reductase and further having a recombinant plasmid which plasmid contains the DNA sequence effecting expression of L-sorbose dehydrogenase so that L-sorbose is converted to 2-KGA.

5,082,786

GLUCOSE SENSOR WITH GEL-IMMOBILIZED GLUCOSE OXIDASE AND GLUCONOLACTONASE

Shinya Nakamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 28, 1988, Ser. No. 276,663

Int. Cl.[5] C12M *1/40;* **C12Q** *1/54*

U.S. Cl. 435—288 **5 Claims**

1. A glucose sensor comprising (1) a gel in which glucose oxidase is immobilized and (2) a pH sensing element in sensing contact with said gel wherein said gel contains gluconolactonase (EC 3.1.1.17) in an amount effective to accelerate the hydrolysis of D-glucono-δ-lactone.

5,082,787

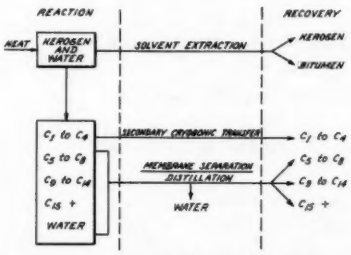
METHOD OF PERFORMING HYDROUS PYROLYSIS FOR STUDYING THE KINETIC PARAMETERS OF HYDROCARBONS GENERATED FROM SOURCE MATERIAL

David G. Nolte; Helen K. Haskin, both of Houston, and Edwin L. Colling, Jr., Sugar Land, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 22, 1989, Ser. No. 455,112

Int. Cl.[5] G01N *25/14*

U.S. Cl. 436—31 **11 Claims**



1. A method of performing hydrous pyrolysis on a sample of hydrocarbon source material for studying the kinetic parameters of hydrocarbons generated from said source material, comprising the steps of:

enclosing a measured amount of hydrocarbon source material in a sample holder closed at both ends by fluid permeable discs and sealing said sample holder in a pressure chamber of a reactor;

sequentially charging said reactor with inert gas and evacuating said chamber to completely purge it of oxygen;

at lease partially flooding said evacuated chamber with pure water;

briefly evacuating said chamber to remove any remaining gases therefrom;

heating said sample to a specified temperature for a specified period of time during which hydrocarbons generated by thermal maturation will be driven from said sample;

transferring the water and more volatile generated hydrocarbons cryogenically into a transfer vessel which has also been purged of oxygen;

recovering soluble bitumen and insoluble kerogen from said sample holder and chamber by washing;

cryogenically recovering a first portion of said hydrocarbons from said transfer vessel; and

recovering a remaining portion of said hydrocarbons by

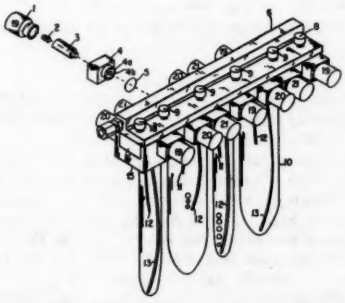
drying any residue materials remaining in said transfer vessel as a result of said cryogenic recovery step.

5,082,788

METHOD OF SEQUENCING PEPTIDES AND PROTEINS USING A VALVE BLOCK ASSEMBLY

Vincent R. Farnsworth, Agoura, and Paul K. Cartier, III, Arcadia, both of Calif., assignors to Porton Instruments, Inc., Tarzana, Calif.

Division of Ser. No. 205,772, Jun. 13, 1988, Pat. No. 4,911,195, which is a continuation-in-part of Ser. No. 901,327, Aug. 27, 1986, Pat. No. 4,773,446. This application Aug. 22, 1989, Ser. No. 396,684
Int. Cl.[5] G01N *33/68*
U.S. Cl. 436—89 6 Claims



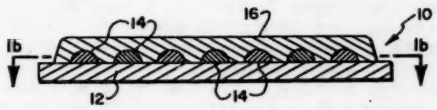
1. In a method of sequencing a peptide or protein sample by stepwise degradation, each degradation step comprising a coupling reaction of a peptide or protein having an unblocked amino terminal amino acid with a coupling reagent to form a desired derivative of the amino-terminal amino acid of the peptide or protein and a cleavage reaction with a cleavage reagent to cleave the derivatized amino-terminal amino acid from the remainder of the peptide or protein, leaving a peptide or protein fragment having a new amino terminal amino acid vulnerable to further degradation, wherein the derivative formed by the coupling reaction readily reacts with oxygen to form an oxidized derivative which is more resistant to cleavage by said cleavage reagent than is the desired derivative, the improvement comprising inhibiting contamination of said coupling and cleavage reagents, said sample and said desired derivative with oxygen by (a) introducing said reagents into a gas-tight reservoir means formed of a material essentially impermeably to oxygen, said reservoir means being provided with an essentially oxygen-free atmosphere and (b) dispensing said reagents to the sample through a valve block assembly, said valve block assembly comprising a valve block to which said reservoir means is joined prior to said dispensing, said valve block having channels defined therein, said assembly further comprising one or more conduit means external to said valve block but communicating with said channels and said reservoir means, each conduit means being enclosed by said reservoir means and said valve block when the two are joined, whereby said conduit means is isolated from oxygen outside said reservoir means, said reagents being dispensed through said conduit means and said channels.

5,082,789

BISMUTH MOLYBDATE GAS SENSOR

Stanley R. Morrison; Norma J. Hykaway, both of Burnaby; William M. Sears, Port Moody, and Robert F. Frindt, Vancouver, all of Canada, assignors to Simon Fraser University, Brunaby, Canada

Filed Aug. 23, 1988, Ser. No. 235,369
Int. Cl.[5] G01N *31/10, 27/12*
U.S. Cl. 436—132 13 Claims



10. A method of measuring gas concentration, comprising the steps of:

(a) exposing said gas to a sensor comprising a mixture of the $Bi_2Mo_3O_{12}$ and Bi_2MoO_6 phases of bismuth molybdate; and

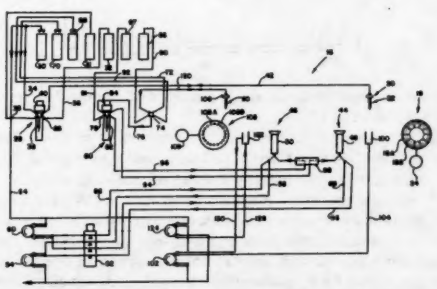
(b) measuring the electrical resistance of said sensor.

5,082,790

APPARATUS AND METHOD FOR DYNAMIC BLANKING OF NON-SPECIFIC LIGHT SCATTERING DURING RATE NEPHELOMETRIC REACTIONS

Paul E. Theobald, Fullerton; Daniel B. Seymour, Chino, and Dobson M. Okawa, Anaheim, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 812,824, Dec. 23, 1985, abandoned. This application Feb. 27, 1989, Ser. No. 317,057
Int. Cl.[5] G01N *21/47, 33/536*
U.S. Cl. 436—536 4 Claims



3. A method of analyzing a chemical reaction, comprising the steps of:

(a) producing a first scatter signal as a function of time from light scattered by a precipitate formed by the reaction and non-specific scatter sources;

(b) sampling the first scatter signal at predetermined time intervals during the reaction;

(c) storing a representation of the sampled first scatter signal;

(d) producing a second scatter signal as a function of time from light scattered only by the non-specific scatter sources that contribute to the first scatter signal;

(e) sampling the second scatter signal at predetermined time intervals beginning with a predetermined time;

(f) storing a representation of the sampled second scatter signal to form blanking signals; and

(g) producing a signal indicative of the difference between the first and second scatter signals by subtracting the blanking signals from the stored representation of the sampled first signal to produce a signal as a function of time wherein the effects of non-specific scattering sources are reduced.

4. Apparatus for analyzing clinical reactions, comprising:

means for producing a first scatter signal as a function of time from light scattered by a precipitate formed by the reaction and non-specific scatter sources;

means for sampling the first scatter signal at predetermined time intervals during the reaction;

means for storing a representation of the sampled first scatter signal;

means for producing a second scatter signal as a function of time from light scattered by non-specific sources that contributed to the first scatter signal;

means for sampling the second scatter signal at predetermined time intervals beginning with a predetermined time;

means for storing a representation of the sampled second scatter signal to form blanking signals; and

means for producing a signal indicative of the difference between the first and second scatter signals by subtracting the blanking signals from stored representation of the sampled first signal to produce a signal as a function of time wherein the effects of non-specific scattering sources are reduced.

5,082,791

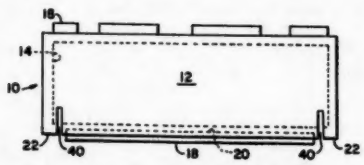
METHOD OF FABRICATING SOLAR CELLS

Ronald H. Micheels, Concord; Percy Valdivia, Cambridge, and Jack I. Hanoka, Brookline, all of Mass., assignors to Mobil Solar Energy Corporation, Billerica, Mass.

Continuation of Ser. No. 193,818, May 13, 1988, abandoned. This application Aug. 18, 1989, Ser. No. 395,904

Int. Cl.[5] H01L *31/18, 21/304, 31/00*

U.S. Cl. 437—2 **3 Claims**



1. A method of fabricating a solar cell comprising in sequence the steps of:

(a) providing a substrate in the form of a silicon ribbon having front and back surfaces and a polygonal edge configuration formed by a series of side edge surfaces;

(b) using a source of phosphorus to form a PN junction in said substrate so that said junction extends adjacent to said front and back surfaces and said side edge surfaces; and

(c) using an excimer laser to form a trench in one of said front and back surfaces so that (1) said trench extends adjacent to and has a configuration similar to said peripheral configuration, (2) said trench extends through and interrupts said junction along the entire length of said trench in said one surface, whereby an ohmic contact formed on said front surface will be electrically isolated from an ohmic contact formed on said rear surface, and (3) the use of said excimer laser to form said trench does not cause phosphorus to diffuse deeper into said substrate.

5,082,792

FORMING A PHYSICAL STRUCTURE ON AN INTEGRATED CIRCUIT DEVICE AND DETERMINING ITS SIZE BY MEASUREMENT OF RESISTANCE

Nicholas F. Pasch, Pacifica, and Philippe Schoenborn, San Jose, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

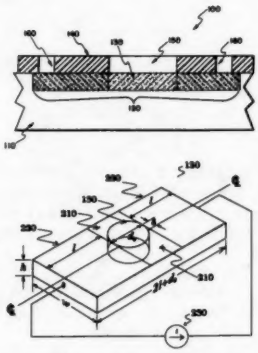
Filed Aug. 15, 1990, Ser. No. 568,269

Int. Cl.[5] H01L *21/66*

U.S. Cl. 437—7 **10 Claims**

1. A method of measuring the size of an electrical contact structure formed above a diffused region in a semiconductor substrate, said contract structure including a contact hole extending to the diffused region, comprising:

electrically modifying an area within the diffused region, rendering it effectively nonconductive;



providing access points to the diffused region outside of the electrically modified area for measuring resistance;

measuring the change in the resistance of the diffused region attributable to the modified area; and

correlating the change to a dimension for the modified area.

5,082,793

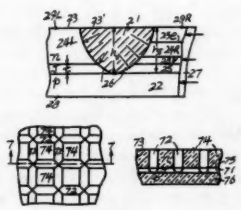
METHOD FOR MAKING SOLID STATE DEVICE UTILIZING ION IMPLANTATION TECHNIQUES

Chou H. Li, 379 Elm Dr., Roslyn, N.Y. 11576

Continuation of Ser. No. 386,102, Aug. 6, 1973, Pat. No. 4,946,800, which is a continuation-in-part of Ser. No. 154,300, Jun. 18, 1971, abandoned, which is a continuation-in-part of Ser. No. 761,646, Sep. 23, 1968, Pat. No. 3,585,714, which is a continuation-in-part of Ser. No. 490,955, Sep. 28, 1965, Pat. No. 3,430,109. This application Nov. 17, 1989, Ser. No. 438,692

Int. Cl.[5] H01L *21/265, 21/20*

U.S. Cl. 437—24 **4 Claims**



1. A method of making a solid state integrated circuit structure of multiple solid-state devices selected from the group consisting of active and passive solid-state devices, each device having an optoelectromagnetically active region which is in or adjacent the device and is selected from the group consisting of PN junction, metal-semiconductor barrier, metal-oxide barrier, semiconductor-oxide barrier, and interfacial rectifying barrier, comprising:

ion-implanting a foreign substance which forms with the solid-state device material a dielectric material compound, said ion-implanting forming a dielectrically isolating groove which extends down into the structure and intersects an active region at least at one lateral side of the bottom of the groove;

spacing the bottom of the groove vertically within a micron of where the groove intersects said active region; and

spacing the center of the groove laterally within one micron of where the groove intersects said active regions;

wherein said groove continuously curves at least where the

groove intersects said active region and the radius of curvature of the groove is less than 1 cm where the groove intersects said active region.

5,082,794

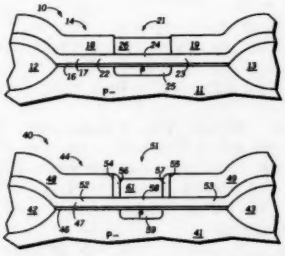
METHOD OF FABRICATING MOS TRANSISTORS USING SELECTIVE POLYSILICON DEPOSITION

James R. Pfiester; Frank K. Baker, and Richard D. Sivan, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 309,589, Feb. 13, 1989, Pat. No. 4,954,854. This application Aug. 17, 1990, Ser. No. 569,097

Int. Cl.[5] H01L *21/28, 21/336*

U.S. Cl. 437—40 **20 Claims**



1. A method for forming a device structure in an active region, comprising:

forming an insulator layer over all of the active region;

forming a polysilicon layer over the insulator layer and over all of the active region;

forming a masking layer over the polysilicon layer to cover all of the active region;

etching away an intermediate portion of the masking layer to leave a first portion and a second portion of the polysilicon layer over the active region covered by the masking layer and to expose a third portion of the polysilicon layer over the polysilicon layer between the first and second portions;

forming a first sidewall spacer along the first sidewall to cover a fourth portion of the the polysilicon layer in said third portion;

forming a second sidewall spacer on the second sidewall to cover a fifth portion of the polysilicon layer, said fourth and fifth portions being separated by a sixth portion of the polysilicon layer; and

selectively depositing silicon to form a polysilicon gate on the third portion of the polysilicon layer between the first and second sidewalls.

5,082,795

METHOD OF FABRICATING A FIELD EFFECT SEMICONDUCTOR DEVICE HAVING A SELF-ALIGNED STRUCTURE

Victor A. K. Temple, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 938,666, Dec. 5, 1986, abandoned. This application Nov. 1, 1988, Ser. No. 267,757

Int. Cl.[5] H01L *21/266, 21/467*

U.S. Cl. 437—41 **9 Claims**

1. A self-aligned method of fabricating a self aligned vertical channel semiconductor device comprising the steps of:

(a) providing a partially processed semiconductor wafer which has been partially processed in accordance with the type of device being fabricated to include any layers which are necessary to enable process steps (b) through (s) below to provide the desired device;

(b) providing a first oxide layer on said partially processed wafer;

(c) doping said wafer through said oxide layer to establish a first layer of one type conductivity semiconductor material atop said semiconductor wafer;

(d) providing a first nitride layer atop said first oxide layer;

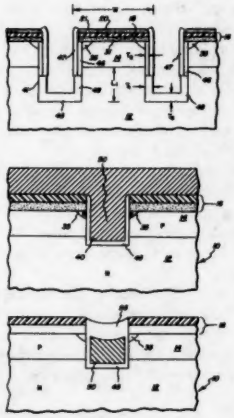
(e) opening a first window through said nitride layer and said first oxide layer to expose a first surface portion of said first layer;

(f) doping said first surface portion of said first layer with opposite type conductivity dopant materials to establish a first region of opposite type conductivity extending into said first layer from said first surface portion of said first layer and beneath a portion of said first nitride and oxide layers;

(g) establishing a trench having substantially vertical walls, having a width which is less than or equal to 3 microns and extending through said first window, said first region and said first layer and into said partially processed wafer to expose surfaces of said first region, said first layer and said partially processed wafer;

(h) establishing a first, non-nitride insulation layer having a thickness T_2 in said trench on the exposed surfaces of said first region, said first layer and said partially processed wafer;

(i) establishing a second nitride layer atop said first insulation layer;



(j) etching said trench further into said wafer to depth L_t to thereby expose a further portion of said wafer and define a pedestal having a width W such that the ratio L_t to W is greater than or equal to 0.5;

(k) growing a second insulation layer having a thickness T_1 within said trench adjacent said further portion of said partially processed wafer such that T_1 is greater than T_2;

(l) removing said second nitride layer;

(m) filling said trench with conductive gate material by depositing said conductive gate material into said trench and over said wafer;

(n) forming a second protective layer atop a portion of said conductive gate material;

(o) removing all said conductive gate material except said conductive gate material which is disposed either within said trench or beneath said protective layer;

(p) opening a second window through said second protective layer to expose a portion of said conductive gate material;

(q) forming a gate electrode in ohmic electrical contact with said conductive gate material;

(r) opening a source contact window; and

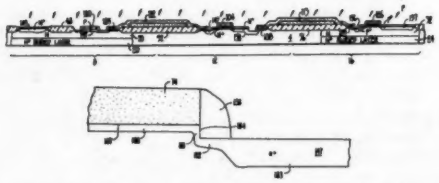
(s) depositing a source metal in electrical contact with said first layer and said first region.

5,082,796

USE OF POLYSILICON LAYER FOR LOCAL INTERCONNECT IN A CMOS OR BICMOS TECHNOLOGY INCORPORATING SIDEWALL SPACERS

Monir H. El-Diwany, Santa Clara; Michael P. Brassington, and Reda R. Razouk, both of Sunnyvale, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 24, 1990, Ser. No. 557,264
Int. Cl.[5] H01L *21/265, 21/225*
U.S. Cl. 437—44 **38 Claims**



1. A method of constructing portions of a metal oxide semiconductor structure comprising the steps of, in sequence,:

depositing a polysilicon layer contacting a semiconductor substrate;

implanting the polysilicon layer with a first conductivity type impurity;

etching the polysilicon layer for forming a buried contact to the substrate with the polysilicon layer and for exposing portions of the substrate adjacent to the buried contact;

lightly doping exposed portions of the substrate adjacent to the buried contact by implanting the substrate with the first conductivity type impurity;

forming a nonconductive oxide spacer on a sidewall of the polysilicon layer and contacting the substrate;

heavily doping the substrate for later forming one of a source or drain region by implanting the substrate with the first conductivity type impurity adjacent to the oxide spacer; and

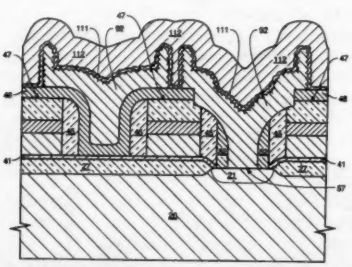
heating the substrate for forming the source or drain region adjacent to the oxide spacer and for forming a continuous first conductivity type region directly beneath the polysilicon layer and the oxide spacer, the continuous first conductivity type region contacting the formed source or drain region.

5,082,797

METHOD OF MAKING STACKED TEXTURED CONTAINER CAPACITOR

Hiang C. Chan; Pierre Fazan, and Yauh-Ching Liu, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jan. 22, 1991, Ser. No. 645,086
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **15 Claims**



1. A process for fabricating a DRAM array on a silicon substrate, said process comprising the following sequence of steps:

creating a plurality of separately isolated active areas arranged in parallel interdigitated rows and parallel non-interdigitated columns;

creating a gate dielectric layer on top of each active area;

depositing a first conductive layer superjacent surface of said array;

depositing a first dielectric layer superjacent said first conductive layer;

masking and etching said first conductive and said first dielectric layers to form a plurality of parallel conductive word lines aligned along said rows such that each said word line passes over a inner portion of each said active area being separated therefrom by a remanent of said gate dielectric layer;

creating of a conductively-doped digit line junction and storage node junction within each said active area on opposite sides of each said word line;

depositing a second dielectric layer superjacent said array surface;

creating a first aligned buried contact location at each said digit line junction in each said active area;

depositing a second conductive layer superjacent said array surface, said second conductive layer making direct contact to said digit line junctions at said first buried contact locations;

depositing a third dielectric layer superjacent to said second conductive layer;

masking and etching said second conductive layer and said third dielectric layer to form a plurality of parallel conductive digit lines aligned along said columns such that a digit line makes electrical contact at each digit line junction within a column, said digit lines running perpendicular to and over said word lines forming a 3-dimensional, waveform-like topology;

depositing a first nitride layer superjacent said array surface of said waveform-like topology;

creating a second aligned buried contact location at each said storage node junction in each said active area;

depositing a third conductive layer superjacent said array surface assuming said waveform-like topology in response to existing topology, said third conductive layer making contact to said storage node junctions at said second buried contact locations;

depositing a second nitride layer;

patterning said third conductive layer and said second nitride layer to form a portion of a poly storage node plate at each said storage node junction, said poly storage node plate having a u-shaped cross-section;

depositing a third nitride layer;

etching said third nitride layer thereby forming vertical nitride spacers superjacent to vertical sides of said poly storage node plate and said second dielectric;

depositing a first oxide layer;

planarizing said first oxide layer thereby forming oxide fillers between said vertical nitride spacers;

etching said first nitride layer and said nitride spacers;

depositing a fourth conductive layer adjacent and coextensive with existing topology;

etching said fourth conductive layer thereby forming vertical poly spacer walls adjacent to said oxide fillers, said spacer walls attaching to said third conductive layer thereby forming a poly storage node plate having an elongated u-shaped cross-section;

etching said oxide fillers;

texturizing said poly storage node plate;

depositing a cell dielectric layer adjacent and coextensive with said storage node plate and adjacent said array surface; and

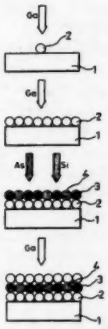
depositing a fifth conductive layer adjacent and coextensive with said cell dielectric layer to form a cell plate common to the entire memory array.

5,082,798

CRYSTAL GROWTH METHOD

Satoshi Arimoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Sep. 27, 1990, Ser. No. 588,808
Claims priority, application Japan, Apr. 18, 1990, 2-102634
Int. Cl.[5] H01L *21/20*
U.S. Cl. 437—108 9 Claims



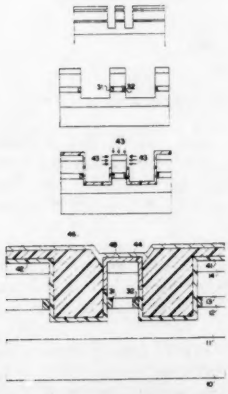
1. A method of growing a p-type III–V compound semiconductor in a metal organic chemical deposition process in which a gaseous compound including the group III element of the compound semiconductor and a gaseous compound including the group V element of the compound semiconductor are supplied independently comprising alternatingly epitaxially growing at a temperature of 300° C. to 600° C. one atomic layer including a group IV amphoteric dopant element and a group V element and epitaxially growing one atomic layer of said group III element.

5,082,799

METHOD FOR FABRICATING INDIUM PHOSPHIDE/INDIUM GALLIUM ARSENIDE PHOSPHIDE BURIED HETEROSTRUCTURE SEMICONDUCTOR LASERS

Roger P. Holmstrom, Wayland; Edmund Meland, Chelmsford, and William Powazinik, Marlborough, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Sep. 14, 1990, Ser. No. 583,409
Int. Cl.[5] H01L *21/20*
U.S. Cl. 437—129 3 Claims



1. A method of fabricating a semiconductor laser having an epitaxial layer wafer configuration comprising a substrate layer, a buffer layer, an active layer, a cladding layer, and a cap layer, wherein said wafer configuration is fabricated for high frequency laser applications, comprising the steps of:

a. depositing on said cap layer of said wafer a layer of mask material compatible with said cap layer;

b. applying a layer of photoresist material on said mask layer;

c. delineating stripes in said photoresist layer along a particular crystallographic direction of one of said wafer layers, thereby exposing window stripes of said mask layer;

d. plasma etching said exposed windows of said mask layer to expose said underlying cap layer to form exposed window stripes of said cap layer;

f. removing said photoresist;

g. subjecting regions of said wafer not protected by said mask material to plasma etching to completely etch said exposed cap layer windows and to partially etch through said cladding layer;

h. subjecting said wafer to a wet chemical etch mixture to selectively and anistropically remove the exposed material of said cladding layer, using said cap layer as an effective mask, whereby window stripes of said active layer are exposed;

i. subjecting said wafer to a plasma etch mixture wherein said mask material, cap layer, and cladding layer serve as an effective mask to etch through said active layer and partially etch through said buffer layer;

j. subjecting said wafer to a wet chemical etch for a time sufficient to remove a selected portion of the exposed buffer layer, using said active layer as an effective mask;

k. exposing said wafer to a wet chemical etching mixture to selectively and concurrently etch exposed regions of said cap layer and said active layer in a lateral direction to create spaces in sidewalls of said cap and active layer, wherein said etching mixture etches said active layer at a known faster rate than said cap layer;

l. removing said mask layer;

m. exposing said entire wafer to an epitaxial growth of an overlayer of a semi-insulating material;

n. etching said wafer to leave an unetched amount of regrowth cladding only in the lateral side wall spaces of said active layer wherein a lateral dimension of said regrowth cladding is determined by the relative undercutting of said active layer with respect to said cap layer;

o. depositing on the mesa side of said wafer a dielectric material which conforms to and encapsulates said mesa and a channel covering said cap layer;

p. forming contact openings on said wafer by performing localized flood exposure of said wafer to controllably remove said dielectric material from the top of said mesa and from a substantial portion of the mesa sidewall;

q. diffusing an appropriate dopant into said contact openings;

u. depositing ohmic contact metal over the entirety of said contact openings;

r. thinning said substrate layer; and

s. forming an electrode on said thinned substrate layer.

5,082,800

METHOD OF FORMING PATTERN IN MANUFACTURING SEMICONDUCTOR DEVICE

Koji Niinobu, and Futoshi Tokunoh, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 12, 1991, Ser. No. 653,928
Claims priority, application Japan, Mar. 7, 1990, 2-56834
Int. Cl.[5] H01L *21/58, 21/328*
U.S. Cl. 437—180 17 Claims

13. A method of manufacturing a semiconductor device, comprising the steps of:

(a) preparing first and second masks on which first and second masking patterns are formed;

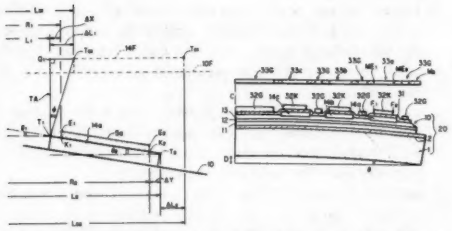
(b) forming a first material pattern on a top major surface of a semiconductor substrate using said first mask;

(c) brazing a bottom major surface of said semiconductor substrate on a metal plate, in which said semiconductor substrate is warped due to a difference between respective thermal expansion coefficients of said semiconductor substrate and said metal plate; and

(d) forming a second material pattern on said top major surface of said semiconductor substrate using said second mask, said second material pattern being adjusted to said first material pattern in position;

wherein the step (a) comprises the steps of:

(a-1) determining, with reference to said first masking pattern in said first masking pattern, a position of a region in said top major surface on which said second material pattern is to be formed;



(a-2) correcting said position of said regions a function of a predetermined allowable limit value of warp in said semiconductor substrate and a distance between said region and a predetermined reference position ton said top major surface to thereby determine a corrected position of said region; and

(a-3) obtaining said second mask in which said masking pattern represents said corrected position of said region; and

the step (d) comprises the steps of:

(d-1) forming a material layer on said top major surface; and

(d-2) patterning said material layer with said second mask while adjusting respective orientations of said material layer and said second mask at said reference position.

5,082,801

PROCESS FOR PRODUCING MULTILAYER INTERCONNECTION FOR SEMICONDUCTOR DEVICE WITH INTERLAYER MECHANICAL STRESS PREVENTION AND INSULATING LAYERS

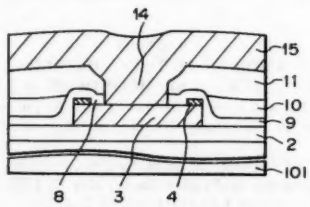
Shunichi Nagata, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 6, 1990, Ser. No. 488,928

Claims priority, application Japan, Mar. 10, 1989, 1-058148

Int. Cl.[5] H01L *21/44*

U.S. Cl. 437—190 **10 Claims**



1. A process for producing a semiconductor device having a multilayer interconnection composed of a plurality of conductive layers electrically separated from each other by interlayer insulating layers inserted therebetween in an area other than sites at which the conductive layers are electrically interconnected via a through hole, at least one of the conductive layers having a layer formed thereon for preventing stress- and/or electro-migration thereof, the process comprising the steps of:

forming a first conductive layer;

forming on said first conductive layer a migration-preventing layer for preventing mechanical stress- and/or electro-migration in said first conductive layer;

forming an opening through said migration-preventing layer, the opening having a width less than a width of said first conductive layer within a region surrounded by a periphery of the opening;

forming an interlayer insulating layer on said migration-preventing layer and the exposed surface of said first conductive layer so as to cover said migration-preventing layer and said first conductive layer, and to fill the opening;

forming a through hole having a width less than the width of the opening and extending through said interlayer insulating layer to the surface of said first conductive layer within the region of the filled opening so that the surface of said first conductive layer is exposed while not exposing a periphery of the opening; and

forming a second conductive layer on said interlayer insulating layer so that, during the forming of said second conductive layer, the through hole is filled with a conductive substance of said second conductive layer to thereby electrically connect said first and the second conductive layers.

5,082,802

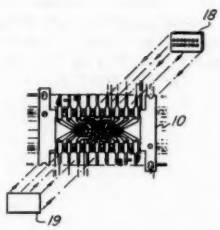
METHOD OF MAKING A MEMORY DEVICE BY PACKAGING TWO INTEGRATED CIRCUIT DIES IN ONE PACKAGE

Tito Gelsomini, Reiti, Italy, assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 213,463, Jun. 29, 1988, Pat. No. 5,014,112, which is a continuation of Ser. No. 797,270, Nov. 11, 1985, abandoned. This application Sep. 19, 1990, Ser. No. 585,583

Int. Cl.[5] H01L *21/56, 21/58, 21/60*

U.S. Cl. 437—217 **23 Claims**



12. A process of making a semiconductor integrated circuit device comprising:

a. providing a lead frame having a plurality of pins and having a plurality of frame bonding pads interconnected with corresponding respective pins, the frame bonding pads being capable of bonding on opposite sides of said lead frame;

b. making at least one pair of semiconductor integrated dies, each die having bonding pads arranged in mirror image of one another, and having pad leads on each die interconnecting corresponding die bonding pads and bonding lands;

c. bonding the pair of dies on opposite sides of said lead frame by bonding said bonding pads of each die to corresponding frame bonding pads; and

d. encapsulating said dies, frame bonding pads and at least a part of each of said pins with insulating material.

5,082,803

PROCESS FOR PRODUCING BONE PROSTHESIS

Masaya Sumita, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1990, Ser. No. 586,101
Claims priority, application Japan, Sep. 21, 1989, 1-245811
Int. Cl.[5] A61F *2/28*
U.S. Cl. 501—1 6 Claims

1. A process for producing a bone prosthesis comprising the steps of: (a) adding granular ceramics to pullulan; and (b) treating said granular ceramics and said pullulan with high-temperature and high-pressure steam.

5,082,804

THICK FILM COPPER VIA FILL INKS

Ashok N. Prabhu, East Windsor, N.J., and Kenneth W. Hang, West Chester, Pa., assignors to David Sarnoff Research Center, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 299,112, Jan. 19, 1989. This application Dec. 15, 1989, Ser. No. 450,937
Int. Cl.[5] C08C *8/18*
U.S. Cl. 501—19 7 Claims

1. A devitrifying glass frit having a devitrification temperature of 900° C. or less and an endotherm prior to devitrification consisting essentially of, on a weight basis:

a) from about 43 to 48 percent of zinc oxide (ZnO);

b) from about 10 to 13 percent of aluminum oxide (Al_2O_3); and

c) from about 40 to 46 percent of silicon dioxide (SiO_2).

5,082,805

GLASS BONDED FILLER COMPOSITIONS FOR SILICON CARBIDE FOAM CORE MIRRORS

Mir A. Ali, Lomita; Ronald E. Robbins, Simi Valley, and Jason M. Wakugawa, Rolling Hills Estate, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 31, 1990, Ser. No. 575,773
Int. Cl.[5] C04B *35/52, 35/56*
U.S. Cl. 501—91 11 Claims

1. A filler composition useful for application to a SiC foam substrate, said filler composition comprising:

from about 35 to about 45 weight percent SiC powder;

from about 1 to about 5 weight percent boron carbide powder;

from about 7 to about 10 weight percent glass powder, said glass powder having a coefficient of thermal expansion substantially equal to said SiC foam, and comprising:

from about 72 to about 77 weight percent silicon dioxide;

from about 15 to about 18 weight percent aluminum oxide;

from about 3 to about 5 weight percent lithium oxide;

from about 0.1 to about 1.5 weight percent magnesium oxide; and

from about 0.1 to about 3.0 weight percent titanium dioxide;

from about 25 to about 35 weight percent organic binder, said binder having a burn-off temperature range of 350Ž C. to 600° C.; and

from about 15 to about 25 weight percent water.

5,082,806

SEMI-CONDUCTING CERAMIC

Francis H. Dulin, Rochester Hills, Mich., assignor to Cooper Industries, Inc., Houston, Tex.

Division of Ser. No. 428,305, Oct. 27, 1989, Pat. No. 5,028,346, which is a continuation-in-part of Ser. No. 78,561, Jul. 28, 1987, abandoned. This application Nov. 14, 1990, Ser. No. 612,506
Int. Cl.[5] C04B *35/56*
U.S. Cl. 501—92 3 Claims

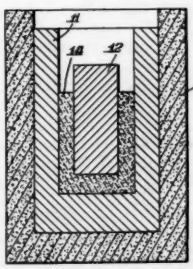
1. In a method for producing an article comprising silicon carbide particles dispersed in a matrix which includes silicon nitride and at least one sintering aid, which method includes the step of firing or sintering the article to convert the matrix to a densified ceramic with the formation of a liquid phase, the improvement of embedding the article, prior to firing, in a cover material which contains powdered silicon and maintaining a nitrogen or an inert atmosphere in contact with the cover material during firing, and wherein the amount of silicon in the cover material and the composition of the atmosphere are such that the silicon carbide particles are protected against oxidation, and the silicon nitride is protected against decomposition, and wherein the cover material contains at least one oxide to retard the volatilization of the sintering aid or aids from the article during firing or sintering.

5,082,807

PRODUCTION OF METAL CARBIDE ARTICLES

Adam J. Gesing; Edward S. Luce; Narashima S. Raghavan, all of Kingston, Canada, and Danny R. White, New Castle, Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Division of Ser. No. 2,823, Jan. 13, 1987, Pat. No. 4,891,338. This application Sep. 28, 1989, Ser. No. 414,191
Int. Cl.[5] C04B *35/56*
U.S. Cl. 501—93 8 Claims



1. A self-supporting ceramic composite comprising (a) a filler selected from the group consisting of (i) at least one carbide of a metal selected from the group consisting of titanium, hafnium, and zirconium and (ii) a material which is substantially inert to molten parent metal and forming reaction product; (b) a ceramic matrix embedding said filler, said ceramic matrix comprising (i) at least one carbide of a metal selected from the group consisting of titanium, hafnium, and zirconium, and characterized as the reaction product between said metal and a precursor carbon source in a stoichiometric amount so as to leave substantially no unreacted carbon; and (ii) a metallic constituent located in at least a portion of said ceramic matrix.

5,082,808

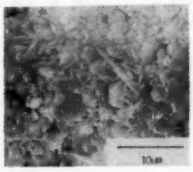
CERAMIC MATERIAL AND METHOD FOR MAKING

Tohru Nonami, Ichikawa, and Nobuo Yasui, Narita, both of Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation of Ser. No. 441,775, Dec. 27, 1989, abandoned, which is a continuation of Ser. No. 374,989, Jul. 3, 1989. This application Oct. 4, 1990, Ser. No. 593,299
Claims priority, application Japan, Jul. 4, 1988, 63-164959; Jul. 4, 1988, 63-164960; Aug. 26, 1988, 63-210669; Oct. 26, 1988, 63-268102; Jan. 12, 1989, 1-5388; Feb. 16, 1989, 1-34967; Aug. 10, 1989, 1-205781
The portion of the term of this patent subsequent to Jul. 16, 2008, has been disclaimed.
Int. Cl.[5] C04B *35/02, 35/10, 35/56, 35/58*
U.S. Cl. 501—95 16 Claims

1. A ceramic material in the form of a composite sintered body comprising crystalline calcium phosphate grains as a matrix and inorganic whiskers dispersed therein wherein an

intermediate layer having a thickness of from 0.005 to 3 microns and containing at least one element present in either one



or both of the whiskers and the grains intervenes between the whiskers and the grains.

5,082,809

HIGH-STRENGTH ALUMINA SINTERED BODY AND PROCESS FOR PREPARATION THEREOF

Katsura Hayashi, Kokubu, Japan, assignor to Kyocera Corporation, Kyoto, Japan

Filed Dec. 20, 1988, Ser. No. 286,888

Claims priority, application Japan, Dec. 21, 1987, 324749; Dec. 23, 1987, 326535

Int. Cl.[5] C04B *35/48*

U.S. Cl. 501—105 **8 Claims**

1. A high-strength alumina sintered body consisting of:

1 to 30% by weight, based on Al_2O_3 and ZrO_2, of ZrO_2;

99 to 70% by weight, based on Al_2O_3 and ZrO_2, of Al_2O_3; and

unavoidable impurities;

said sintered body having a peak based on ZrO_2 at a position of a wave number of 600 ± 10 cm^{-1} in a measurement chart of the laser Raman spectrum analysis.

5,082,810

CERAMIC DIELECTRIC COMPOSITION AND METHOD FOR PREPARATION

Horacio E. Bergna; Salvatore A. Bruno, both of Wilmington, and Ian Burn, Hockessin, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 28, 1990, Ser. No. 506,966

Int. Cl.[5] C04B *35/46;* **B05D** *7/00*

U.S. Cl. 501—134 **9 Claims**

1. A process for preparing a ceramic dielectric composition having a homogeneous distribution of a mixture of secondary components on the surface of a primary ceramic particle component comprising the steps of:

(a) adding a concentrated stable solution of metal chelates to a primary ceramic powder at a controlled rate while vigorously stirring the mixture below the liquid limit of the power for effecting homogeneous distribution of secondary components on the surface; and

(b) drying and calcining the powder to decompose metal chelates and remove volatile residues.

5,082,811

CERAMIC DIELECTRIC COMPOSITIONS AND METHOD FOR ENHANCING DIELECTRIC PROPERTIES

Salvatore A. Bruno, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 28, 1990, Ser. No. 506,965

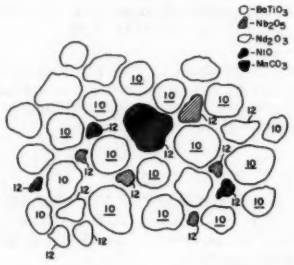
Int. Cl.[5] C04B *35/46*

U.S. Cl. 501—134 **16 Claims**

1. A process for preparing a ceramic dielectric composition having a chemically homogeneous coating of secondary metal oxide or hydrous metal oxide components on the surface of a primary ceramic particle component comprising the steps of:

(a) adding a stable solution of metal chelates to a slurry of fine particle of primary ceramic component with an aqueous solvent with agitation;

(b) adding a strong base to said slurry with metal chelates of step (a) while maintaining a sufficient temperature for a sufficient time to decompose said metal chelates and to deposit a homogeneous coating of secondary metal oxide



or hydrous metal oxides components on the surface of the primary ceramic particle component; and

(c) recovering an washing the homogeneously coated particles.

5,082,812

PROCESS FOR THE MANUFACTURE OF ELECTROCERAMICS SUCH AS TITANATES AND ZIRCONATES

Julian A. Davies, and Sylvain Dutremez, both of Toledo, Ohio, assignors to The University of Toledo, Toledo, Ohio

Filed Dec. 12, 1989, Ser. No. 449,570

Int. Cl.[5] C04B *35/46, 35/48*

U.S. Cl. 501—137 **35 Claims**

1. A process for forming a compound of the formula AMO_3 wherein A is barium or strontium or a combination thereof, and M is titanium or zirconium, comprising the steps of:

(i) combining an aqueous acidic solution of a dissolved compound of the formula MO_2 with a reactive aqueous solution formed by combining ammonium hydroxide and an ammonium hydroxide soluble aromatic compound having two adjacent carbon atoms which contain groups bearing labile hydrogen atoms, the remaining carbon atoms of said aromatic compound being bonded to hydrogen or an unreactive substituent, and reacting the combination so as to form an organo titanium ammonium compound or an organo zirconium ammonium compound which is reactable with an $A(OH)_2$ compound,

(ii) reacting in an aqueous solution, said organo titanium ammonium compound or said organo zirconium ammonium compound with one or more hydroxides of the formula $A(OH)_2$ so as to form a pyrolyzable organic precursor of said AMO_3 compound and

(iii) pyrolyzing said precursor to form said compound of the formula AMO_3.

5,082,813

ALUMINOSILICATES WITH MODIFIED CATION AFFINITY

Petr Taborsky, 14535 Bruce B. Downs Blvd., Tampa, Fla. 33613

Filed Jan. 6, 1989, Ser. No. 294,160

Int. Cl.[5] B01J *20/12, 20/16*

U.S. Cl. 502—60 **15 Claims**

1. Aluminosilicate irreversibly dehydrated to such extent as to increase the ratio of its affinity for a given cation, to its affinity for a given dissimilar cation, to at least about five times as great as such affinity ratio of such aluminosilicate before such dehydration.

2. Aluminosilicate according to claim 1, selected from the class consisting of zeolites and layered clays.

5. Aluminosilicate according to claim 1, having been heated in dry condition to a temperature between about 700° C. and 900° C. in prior pretreatment for such dehydrate.

5,082,814

SHELL-COATED FCC CATALYSTS

David M. Stockwell, Iselin; Gerald S. Koermer, Roseland, both of N.J., and William M. Jaglowski, New York, N.Y., assignors to Engelhard Corporation, Iselin, N.J.

Filed Jan. 31, 1991, Ser. No. 648,256
Int. Cl.[5] B01J *29/06*
U.S. Cl. 502—68 7 Claims

1. A zeolite-containing fluid cracking catalyst coated with a shell said shell having a microactivity of less than 20 and characterized by either being sinterable or having a surface area less than 50 M^2/g said shell being a mixture of at least one hydrous refractory metal oxide or silicate including precursor thereof having an average particle size of 0.3 to 5 microns and a refractory inorganic binder having a particle size no greater than 0.01 microns, said shell being 10 to 80 weight percent of the total catalyst.

2. A zeolite-containing fluid cracking catalyst coated with a shell comprising clay and a source of silica wherein the shell is 10 to 60 weight percent of the total catalyst.

5,082,815

KAOLIN CONTAINING FLUID CRACKING CATALYST

Jose C. D. Macedo, Rio de Janeiro, Brazil, assignor to Petroleo Brasileiro, S.A.-Petrobras, Rio de Janeiro, Brazil

Filed Sep. 6, 1989, Ser. No. 404,030
Claims priority, application Brazil, Sep. 6, 1988, PI8804583; Sep. 6, 1988, PI8804777; Sep. 27, 1988, PI8804981
Int. Cl.[5] B01J *21/16, 29/08*
U.S. Cl. 502—68 7 Claims

1. A catalyst composition for fluid cracking comprising
a. 5 to 50% by weight of a crystalline aluminosilicate;
b. 5 to 80% by weight of an acid treated clay selected from the group consisting of kaolin and metakaolin obtained by admixing said clay with sulphuric acid, with the resulting slurry being heated to 25°–110° C. for 1 to 100 hours under atmospheric or superatmospheric pressure, filtering and washing the clay without previous neutralization, and, optionally, drying the clay;
c. 0 to 65% by weight of a clay;
d. 0 to 50% of an active matrix;
e. the balance being made up of a synthetic matrix.

5. The catalyst composition of claim 1, comprising 15 to 30% of a crystalline aluminiosilicate selected from the group consisting of X and Y type and the ultrastabilized X and Y type zeolites, 10 to 50% of acid treated clay comprising component (b), 10 to 45% of kaolin, 0 to 20% of an active matrix, the balance being made up of a synthetic matrix selected from the group consisting of silica, silica-alumina, and alumina.

5,082,816

LEAD-ZIRCONATE CATALYSTS

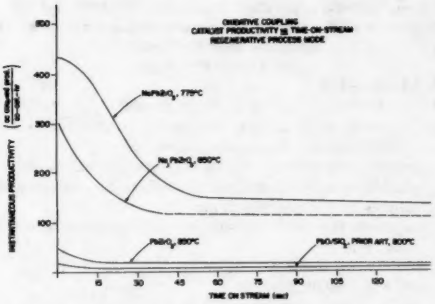
Raymond G. Teller, Aurora; James F. Brazdil, Jr., Mayfield Village; Joseph P. Bartek, Highland Heights, and Ann M. Brussee, Wickliffe, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 437,306, Nov. 17, 1989, abandoned, which is a continuation of Ser. No. 293,002, Jan. 3, 1989, abandoned, which is a division of Ser. No. 901,106, Aug. 28, 1986, Pat. No. 4,795,848. This application Jul. 23, 1990, Ser. No. 555,812
Int. Cl.[5] B01J *21/16, 21/12, 21/06;* C10G *25/02*
U.S. Cl. 502—84 21 Claims

1. A catalyst for the conversion of a low molecular weight alkane to a higher order hydrocarbon, wherein said catalyst comprises a composition having the formula

$$Pb\ Zr_z\ A_a\ B_b\ O_x$$

wherein
A is Mg, Ca, Sr, Ba, Zn, Ce, Sc, Y, Ti, Hf, or mixtures thereof;
B is Li, Na, K, Rb, Cs or mixtures thereof; and
wherein
z is about 1 to about 100;
a is 0.0 to about 100;
b is about 0.1 to about 100;



x is the number of oxygens needed to fulfill the valence requirements of the other elements; and
wherein (a+b) is about 0.1 to about 100, and the catalyst is substantially free of PbO and uncombined Pb.

5,082,817

CATALYSTS FOR THE POLYMERIZATION OF OLEFINS

Enrico Albizzati, Arona, and Luigi Resconi, Milan, both of Italy, assignors to Ausimont S.r.l., Milan, Italy; Hilmont Incorporated, New Castle County, Del. and Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 275,128, Nov. 22, 1988, abandoned. This application Jan. 15, 1991, Ser. No. 641,336
Claims priority, application Italy, Nov. 27, 1987, 41013 A/87
Int. Cl.[5] C08F *4/64*
U.S. Cl. 502—102 5 Claims

1. Catalysts for the (co)polymerization of olefins, which contain the product of the reaction of:
a) a solid catalytic component having a porosity of at least 0.2 cc/g., comprising a compound of Ti or Zr with at least one metal-halogen linkage, and optionally an electron-donor compound, supported on an anhydrous magnesium halide in the active form, having an X-ray diffraction spectrum in which the most intense line appearing in the spectrum of the corresponding halide in a non-active state having a surface area of about 1 m^2/g is replaced by a halo having its intensity maximum shifted relatively to the interplanar distance of said line, with;
b) a compound of Hf, Ti or Zr, containing at least one metal-carbon linkage, of the formula:

$$MR_nX_{4-n}$$

wherein:
M=Hf, Ti, or Zr,
R=$-CH_3$, $-CH_2-SiR'_3$, $-CH_2-CR'_3$, or $-CH_2$-aryl, with R'=a linear or branched alkyl radical containing from 1 to 10 carbon atoms;
X=halogen, —OR, or $-NR_2$; and
n=a numeral of from 1 to 4.

5,082,818

PRODUCTION OF ALPHA-OLEFIN POLYMERS

Mitsuyuki Matsuura, and Takashi Fujita, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Jan. 8, 1990, Ser. No. 461,756

Claims priority, application Japan, Jan. 10, 1989, 1-3048

The portion of the term of this patent subsequent to Mar. 21, 2006, has been disclaimed.

Int. Cl.[5] C08F *4/656*

U.S. Cl. 502—119 24 Claims

1. A solid catalyst component for an olefin polymerization catalyst, which solid catalyst component is obtained by contacting the following Components (i) to (iv):

Component (i) which is a solid catalyst component for Ziegler-type catalysts comprising titanium, magnesium and a halogen as the essential components;

Component (ii) which is a silicon compound represented by a formula

$$R^1R^2{}_{3-n}Si(OR^3)_n$$

wherein R^1 indicates a branched hydrocarbyl group, R^2 which may be the same as or different from RI indicates a hydrocarbyl group, R^3 which may be the same as or different from R^1 and/Or R^2 indicates a hydrocarbyl group, and n is a number satisfying an equation $1 \leqq n \leqq 3$;

Component (iii) which is a halogen compound of sulfur or phosphorus and

Component (iv) which is an organometal compound of a metal of the Groups I to III of the Periodic Table.

5,082,819

CATALYST FOR CATALYTIC GAS PHASE OXIDATION OF OLEFINS INTO UNSATURATED ALDEHYDES AND METHOD FOR MAKING THE CATALYST

Wolfgang Boeck, Langenselbold; Dietrich Arntz, Oberursel, both of Fed. Rep. of Germany; Guenter Prescher, Larchmont, N.Y., and Werner Burkhardt, Brachtal, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 13, 1990, Ser. No. 581,702

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1989, 3930533

Int. Cl.[5] B01J *27/192*

U.S. Cl. 502—212 21 Claims

1. A catalyst for the production of unsaturated aldehydes from olefins, especially of acrolein from propene, through oxidation with a oxygen-containing gas, said catalyst comprising the following properties:

(a) an active mass comprising at least the elements molybdenum, bismuth, phosphorus, and oxygen in atomic ratios of:

$$Mo_{12}Bi_{0.2-10}P_{0.2-5}O_x$$

as well as silicon-containing carrier material wherein X denotes the number of oxygen atoms which satisfies the valences of the other elements;

(b) a catalyst body having any desired geometrical shape whose ratio between the outside surface Op and the volume Vp is above 1.6 mm^{-1} and in which the spatial dimension, described by the diameter of a sphere which barely encloses it, is smaller than 7.5 mm;

(c) a porosity of the catalyst amounting to at least 0.46, the absence of micropores (<2 nm), a mesopore volume (2–30 nm) of at least 0.03 cm^3/g as well as a macropore volume (>30 nm) of at least 0.30 cm^3/g;

(d) a mercury density of the catalyst body amounting to at least 1.25 g/cm^3;

(e) a specific BET surface area amounting to at least 10 m^2/g;

(f) a breaking strength of at least 6.0N;

(g) an abrasion of less than 50 mg/g catalyst; and

(h) a pressure loss of less than 1600 Pa/m of a catalyst charge inserted into a tube with a diameter of 2 cm.

5,082,820

CARRIER FOR GAS-TREATING CATALYST, METHOD FOR PRODUCTION THEREOF AND GAS-TREATING CATALYST INCORPORATING SAID CARRIER THEREIN

Kiichiro Mitsui, Akashi; Tooru Ishii, Himeji; Kuinio Sano, Ako, and Akira Inoue, Hirakata, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Nov. 27, 1989, Ser. No. 441,375

Claims priority, application Japan, Nov. 25, 1988, 63-296023; Nov. 28, 1988, 63-298297

Int. Cl.[5] B01J *21/06*

U.S. Cl. 502—350 13 Claims

9. A method for the production of a waste gas-treating catalyst, which comprises:

a) preparing a powder containing composite oxide by heat-treating a substance containing a titanium compound and a zirconium compound at a temperature in the range of 660° to 1,000° C., thereby giving rise to a composite oxide titanium and zirconium possessing a crystalline structure of $ZrTiO_4$;

b) depositing a catalytically active component on said powder as a carrier component, said catalytically active component being at least one metal selected from the group consisting of manganese, iron, chromium, vanadium, molybdenum, cerium, cobalt, nickel, tungsten, copper, silver, gold, platinum, palladium, rhodium, ruthenium and iridium or a compound of said metal; and

c) molding said powder in the shape of a unitary structure possessing a plurality of holes.

5,082,821

HEAT-SENSITIVE RECORDING MATERIALS

Yuichi Itabashi, and Takayuki Hayashi, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 327,890, Mar. 23, 1989, abandoned.

This application Oct. 24, 1990, Ser. No. 602,897

Claims priority, application Japan, Mar. 23, 1988, 63-69054

Int. Cl.[5] B41M *5/18*

U.S. Cl. 503—200 5 Claims

1. A heat-sensitive recording material comprising a support having provided thereon a heat-sensitive recording layer, wherein said support consists essentially of a fine porous membrane sheet comprising polyswfones and/or cellulose, esters.

5,082,822

SUBBING LAYER FOR DYE-DONOR ELEMENT USED IN THERMAL DYE TRANSFER

Herman J. Uytterhoeven, Bonheiden, and Etienne A. Van Thillo, Essen, both of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Dec. 7, 1990, Ser. No. 623,564

Claims priority, application European Pat. Off., Dec. 18, 1989, EP 892-3233.5

Int. Cl.[5] B41M *5/035, 5/26*

U.S. Cl. 503—227 8 Claims

1. Dye-donor element for use in thermal dye sublimation transfer methods, said element comprising a polyethylene terephthalate support having thereon in the order given a subbing layer and a dye/binder layer comprising a dye dispersed in a binder, wherein said subbing layer comprises at least one aromatic polyol swelling agent for polyethylene terephthalate and a binder that is soluble in organic solvents.

5,082,823

CYAN DYES FOR USE IN THERMAL DYE SUBLIMATION TRANSFER

Luc J. Vanmaele, Lochristi, and Wilhelmus Janssens, Aarschot, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Apr. 16, 1990, Ser. No. 509,220

Claims priority, application European Pat. Off., Apr. 19, 1989, 89201001.8

Int. Cl.[5] B41M *5/035, 5/26*

U.S. Cl. 503—227 6 Claims

1. Cyan dye-donor element for use according to thermal dye sublimation transfer comprising a support having thereon a dye layer containing a 2-carbazoyl-4-[N-(p-substituted aminoaryl)imino]-1,4-quinone dye including such a dye wherein the carbazoyl moiety is substituted or a 2-hydroxaminocarbonyl-4-[N-(p-substituted aminoaryl)imino]-1,4-quinone dye including such a dye wherein the hydroxaminocarbonyl moiety is substituted.

5,082,824

RECEIVER SHEET

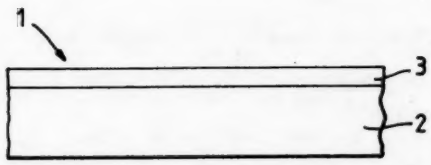
Gary V. Rhoades, Stockton on Tees, and John Francis, Yarm, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Jun. 22, 1989, Ser. No. 369,940

Claims priority, application United Kingdom, Jun. 29, 1988, 8815423

Int. Cl.[5] B41M *5/035, 5/26*

U.S. Cl. 503—227 12 Claims



1. In a thermal transfer printing receiver sheet for use in association with a compatible donor sheet, the receiver sheet comprising a supporting substrate having, on at least one surface thereof, a dye-receptive receiving layer to receive a dye thermally transferred from the donor sheet, and a release medium in or on the receiving layer, the improvement wherein the release medium comprises a dye-permeable polyurethane resin which is the reaction product.

(i) an organic polyisocyanate

(ii) an isocyanate-reactive polydialkylsiloxane, and

(iii) a polymeric polyol.

5,082,825

PROCESS FOR MAKING T1-BA-CA-CU-O SUPERCONDUCTORS

Allen M. Hermann, and Zhengzhi Sheng, both of Fayetteville, Ark., assignors to University of Arkansas, Little Rock, Ark.

Filed Aug. 25, 1988, Ser. No. 236,507

Int. Cl.[5] C01F *11/02;* C01G *3/02, 15/00*

U.S. Cl. 505—1 22 Claims

1. A method for making high temperature superconductors comprising the steps of:

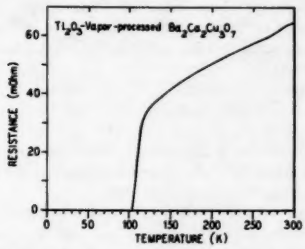
a. grinding a mixture of a compound selected from the group consisting of $CaCo_3$, CaO, a compound selected from the group consisting of $BaCO_3$ and BaO_2, and CuO and heating the ground mixture to obtain a uniform black Ba-Ca-Cu-O powder;

b. pressing the resulting Ba-Ca-Cu-O powder into a pellet;

c. heating the pellet;

d. allowing the pellet to cool;

e. placing the pellet near an amount of Tl_2O_3;



f. heating the pellet and Tl_2O_3 so that at least a portion of the Tl_2O_3 vaporizes; and

g. allowing the resultant product to cool.

5,082,826

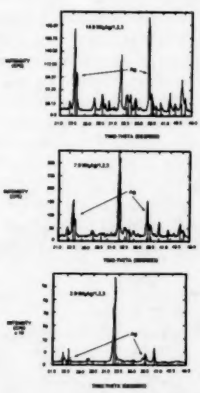
SILVER COATED SUPERCONDUCTING CERAMIC POWDER

William A. Ferrando, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 389,220, Aug. 2, 1989. This application Aug. 2, 1990, Ser. No. 561,750

Int. Cl.[5] H01B *12/02, 39/12;* B32B *5/16*

U.S. Cl. 505—1 21 Claims



1. A silver metal coated superconducting ceramic powder wherein the superconducting ceramic particles are each coated with a uniform layer of silver metal which is from about 0.02 to about 10 microns thick, wherein the silver metal comprises from about 1 to about 25 weight percent of the silver-coated superconducting ceramic powder with the superconducting ceramic material comprising the remainder, and wherein the silver-coated superconducting ceramic powder is a loose powder.

5,082,827

RECORDING HEAD SUSPENSION UTILIZING SUPERCONDUCTOR MEANS

Frank S. Barnes, Boulder, Colo., assignor to University of Colorado Foundation, Inc., Boulder, Colo.

Filed Jun. 1, 1990, Ser. No. 532,302

Int. Cl.[5] H01B *12/00;* G11B *21/02, 21/22, 5/54*

U.S. Cl. 505—1 11 Claims

1. Apparatus for exchanging information between moving recording media and an information transducing head, the

head including structure for imparting information to the media, for detecting information recorded on the media, or both, comprising;

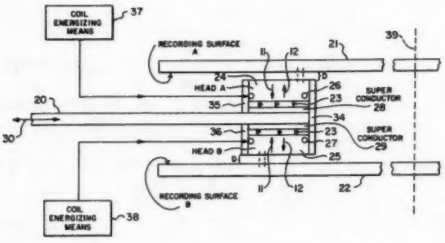
an arm having a head attached thereto, said head being capable of exchanging information with the media,

a superconductor member associated with one of said arm or said head,

an electrically energizable coil associated with said superconductor member and with the other one of said arm or said head,

a controllable energizing circuit connected to energize said coil as a function of a desired distance to be maintained between said head and the media,

a first force member biasing said head away from the media, said superconductor member and said coil providing a magnetic mirror force opposing said first force member,



a distance sensor for sensing the distance that exists between said head and the media and providing a distance feedback input to said controllable energizing circuit, and

distance command means providing a command input to said controllable energizing circuit to specify a command distance to be maintained between said head and the media, said distance command means providing a given magnitude of energization for said coil when said head is selected to either impart information to the media or detect information recorded on the media, said given magnitude of coil energization operating to reduce the distance between said head and the media when said head is so selected as compared to when said head is not so selected.

5,082,828

ECLOSION HORMONE PEPTIDES

David A. Schooley, Reno, Nev.; Hiroshi Kataoka, Tokyo, Japan, and Steven J. Kramer, Sunnyvale, Calif., assignors to Sandoz Ltd., Basle, Switzerland

Continuation-in-part of Ser. No. 451,289, Dec. 15, 1989, abandoned, which is a continuation-in-part of Ser. No. 223,139, Jul. 22, 1988, abandoned. This application Jan. 22, 1991, Ser. No. 645,088

Int. Cl.[5] **A61K** *37/02;* **C07K** *7/10*

U.S. Cl. 514—12 **4 Claims**

2. A polypeptide free from associated insect polypeptides having an amino acid sequence conforming to the formula:

Asn Pro Ala Ile Ala Thr Gly Tyr Asp Pro Met
Glu Ile Cys Ile Glu Asn Cys Ala Gln Cys Lys
Lys Met Leu Gly Ala Trp Phe Glu Gly Pro Leu
Cys Ala Glu Ser Cys Ile Lys Phe Lys Gly Lys
Leu Ile Pro Glu Cys Glu Asp Phe Ala Ser Ile
Ala Pro Phe Leu Asn Lys Leu.

5,082,829

AICA RIBOSIDE PRODRUGS

Harry E. Gruber, San Diego; Clinton E. Browne, Oceanside; Bheemaro G. Vgarkar, Escondido, and Jack W. Reich, Carlsbad, all of Calif., assignors to Gensia Pharmaceuticals, San Diego, Calif.

Filed Jan. 24, 1989, Ser. No. 301,222

Int. Cl.[5] **A01N** *43/, 04, 31/70;* **C07H** *17/02*

U.S. Cl. 514—43 **26 Claims**

1. A method for enhancing the extracellular concentration of adenosine around cells having a decreased ratio of synthesis of adenosine triphosphate to breakdown of adenosine triphosphate due to a pathologic process comprising the aministration of an 5-amino-4-imidazolecarboxamine riboside prodrug which comprises a modified 5-amino-4-imidozolecarboxomide riboside having an 5-amino-4-imidazolecarboxamide ribosyl moeity and at least one hydrocarbyloxycarbonyl or hydrocarbylcarbonyl moiety per equivalent weight of 5-amino-4-imidazolecarboxamide ribosyl moiety.

5,082,830

END LABELED NUCLEOTIDE PROBE

Christine L. Brakel, Brightwaters, N.Y.; Alan F. Cook, Cedar Groove, N.J., and Edmund Vuocolo, Bronx, N.Y., assignors to Enzo Biochem, Inc., New York, N.Y.

Filed Feb. 26, 1988, Ser. No. 160,607

Int. Cl.[5] **A61K** *31/70;* **C07H** *15/12;* **C12Q** *1/68;* **C12P** *19/34*

U.S. Cl. 514—44 **32 Claims**

1. An oligo- or polynucleotide having at least one non-radioactive moiety directly or indirectly attached to each of the 5′ and 3′ end nucleotides thereof.

5,082,831

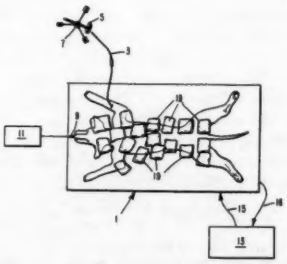
TOTAL BODY WASHOUT SOLUTION AND METHOD OF USE

Jerry D. Leaf, Downey, and Michael G. Federowicz, Riverside, both of Calif., assignors to Cryovita Laboratories, Inc., Riverside, Calif.

Filed Dec. 5, 1989, Ser. No. 446,006

Int. Cl.[5] **A61K** *37/26, 31/715;* **A01N** *1/02*

U.S. Cl. 514—56 **5 Claims**



1. An aqueous perfusate composition comprising:

Component	Molar Conc., mM	Grams/Liter
Hydroxyethyl starch, MW = 500,000	40 to 60 gms	
Glucose	5–15	0.9–2.7
Sodium bicarbonate	5–20	0.42–1.68
Potassium chloride	15–40	1.15–3.33
Calcium chloride	0.5–2.04	0.074–0.294
Magnesium chloride	0.25–2.5	0.051–0.51
HEPES or THAM	7.2–15	1.72–3.90
Sodium phosphate, monobasic, MW = 120.0	7.2–15	
Mannitol or sucrose	0–170	0–30.97

and an effective amount of heparin to prevent coagulation.

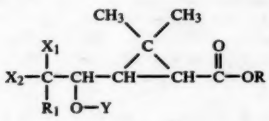
5,082,832

NOVEL CYCLOPROPANE CARBOXYLATES

Joseph Cadiergue, Aulnay Sous Bois; Jean-Pierre Demoute, Montreuil-Sous-Bois, and Jean Tessier, Vincennes, all of France, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 123,374, Nov. 20, 1987, Pat. No. 4,925,874. This application Oct. 18, 1989, Ser. No. 423,803
Claims priority, application France, Nov. 20, 1986, 86 16155
Int. Cl.[5] A61K *31/19, 31/275;* C07C *255/50, 229/20*
U.S. Cl. 514—110 26 Claims

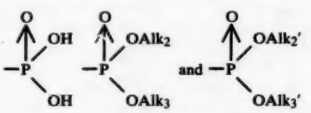
1. A compound of the formula



I

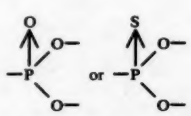
wherein X_1 and X_2 are individually halogen, R_1 is selected from the group consisting of halogen, alkyl of 1 to 8 carbon atoms, aryl of 6 to 14 carbon atoms unsubstituted or substituted with halogen, perfluoroalkyl of 1 to 8 carbon atoms, —CN and

R′ is alkyl of 1 to 8 carbon atoms, Y is selected from the group consisting of

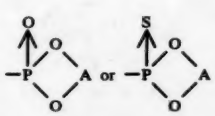


Alk_2, Alk_3, Alk_2', and Alk_3', are alkyl of 1 to 8 carbon atoms unsubstituted or substituted with at least one member of the group consisting of alkyl of 1 to 5 carbon atoms, halogen, —CF_3 and hydroxyl, or

together with



form the rings



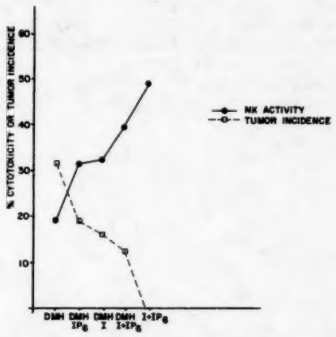
wherein A is alkylene of 1 to 6 carbon atoms unsubstituted or substituted with at least one member of the group consisting of 1 to 5 carbon atoms, halogen, —CF_3 and hydroxyl.

5,082,833

REDUCTION OF CELL PROLIFERATION AND ENHANCEMENT OF NK-CELL ACTIVITY

Abulkalam M. Shamsuddin, 2916 Old Court Road, Baltimore, Md. 21208

Filed Jun. 30, 1988, Ser. No. 213,889
Int. Cl.[5] A61K *31/45;* A61U *31/66*
U.S. Cl. 514—143 20 Claims



1. A method for moderating the rate of cellular mitosis in a living mammal having a pathologically elevated rate of cellular mitosis, which comprises administering to the mammal a safe and effective amount of solution of a) inositol hexaphosphate or a physiologically acceptable salt thereof; and b) inositol or a physiologically acceptable salt thereof, in a molar ratio of a):b) from about 1:3 to 3:1 effective to moderate the elevated rate of cellular mitosis to a normal, non-pathological rate.

5,082,834

ANTI-INFLAMMATORY AND ANTI-ULCER COMPOUNDS AND PROCESS

John R. J. Sorensen, 1167 Hollywood Ave., Cincinnati, Ohio 45224

Continuation of Ser. No. 786,727, Oct. 15, 1985, abandoned, which is a continuation of Ser. No. 604,728, Apr. 27, 1984, abandoned, which is a continuation of Ser. No. 109,097, Jan. 2, 1980, abandoned, which is a continuation of Ser. No. 910,421, May 30, 1978, Pat. No. 4,221,785, which is a division of Ser. No. 563,778, Mar. 31, 1975, abandoned. This application Sep. 18, 1990, Ser. No. 585,027
Int. Cl.[5] A61K *31/60, 31/555*
U.S. Cl. 514—159 9 Claims

1. A process for treating arthritis in an animal body while reducing the likelihood of producing ulcers, consisting essentially of:

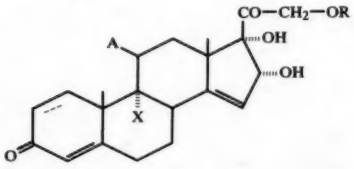
administering to said animal body, orally or parenterally, a copper coordination compound having anti-ulcergenic properties having anti-ulcergenic properties selected from the group consisting of Bis(3,5-diisopropylsalicylate(O,O)copper (II)[Cu(II)(3,5-dips)$_2$], Tetra(u-acetylsalicylato)biscopper(II),[Cu(II$_2$(aspirinate)$_4$], and (Salicylato)$_{2n}$-(aqua)$_{4n}$-copper(II)$_n$[Cu(II) Salicylate)phd 2 (H_2O)$_4$], wherein n is a number, the amount of said copper coordination compound administered to said animal body being about 2.5 to 165 mg per kilogram of body weight.

5,082,835
NOVEL STEROID DIOLS, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND PROCESS FOR PREPARING SAME

Csaba Molnar; György Hajos; Laszlo Szporny; Jozsef Toth; Arpad Kiraly; Anna Boor nee Mezei; Janos Csörgei; Kristina Szekely; Lilla Forgacs; György Fekete; Bulcsu Herenyi; Sandor Holly, and Jozsef Szunyog, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R.T., Budapest, Hungary

Filed Mar. 9, 1990, Ser. No. 491,683
Claims priority, application Hungary, Mar. 9, 1989, 1156/89
Int. Cl.[5] C07J *7/00*
U.S. Cl. 514—180 **6 Claims**

1. A compound of the formula (I),



(I)

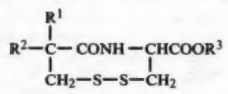
wherein
A stands for hydrogen, hydroxyl or trifluoroacetoxy group;
X stands for hydrogen or halogen with the proviso that if A is hydrogen, then X also means hydrogen;
R stands for hydrogen, benzoyl or C_{1-8}alkanoyl group; and
represents a single or double bond between two adjacent carbon atoms.

5,082,836
COMPOSITIONS AND METHODS OF USE OF CYCLIC SULFUR-CONTAINING COMPOUNDS

Takakazu Morita, Toyonaka; Tadashi Iso, Kawachinagano; Shiro Mita, Ashiya, and Youichi Kawashima, Kyoto, all of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 381,026, Jul. 17, 1989, Pat. No. 5,041,435. This application Jun. 25, 1991, Ser. No. 720,721
Claims priority, application Japan, Aug. 13, 1988, 63-202111
Int. Cl.[5] A61K *31/385;* **C07D** *285/38*
U.S. Cl. 514—183 **12 Claims**

1. A pharmaceutical composition for treatment of an autoimmune disease, which comprises (i) a pharmaceutical carrier and (ii) a compound of the formula (I) or pharmaceutically acceptable salts thereof in an amount effective for treatment of an autoimmune disease,



(I)

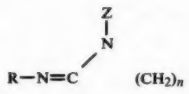
wherein
R^1 and R^2 are the same or different and each is lower alkyl; and
R^3 is hydrogen or lower alkyl.

5,082,837
LACTAMIMIDES AS CALCIUM ANTAGONISTS

Michael G. Palfreyman; Norbert L. Wiech; Hsien C. Cheng, and John M. Kane, all of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals, Cincinnati, Ohio

Division of Ser. No. 212,544, Jun. 28, 1988, Pat. No. 5,010,072. This application Nov. 29, 1990, Ser. No. 620,226
Int. Cl.[5] A01N *43/00, 43/36, 43/40, 43/46*
U.S. Cl. 514—183 **9 Claims**

1. A method of effecting calcium antagonism in a patient in need thereof which comprises administering to the patient a calcium antagonism effective amount of a compound of the formula



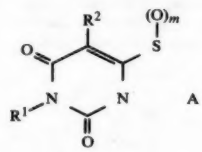
wherein
Z is hydrogen or lower alkyl of from 1 to 4 carbon atoms;
n is an integer of from 3 to 16; and
R is 2,2-diphenylpentyl.

5,082,838
SULFUR-CONTAINING FUSED PYRIMIDINE DERIVATIVES, THEIR PRODUCTION AND USE

Takehiko Naka; Norio Shimamoto, both of Kobe; Taketoshi Saijo, Ikeda, and Masahiro Suno, Kobe, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 13, 1990, Ser. No. 538,071
Claims priority, application Japan, Jun. 21, 1989, 1-156725
Int. Cl.[5] C07D *515/00, 513/00;* **A61K** *31/55, 31/505*
U.S. Cl. 514—211 **26 Claims**

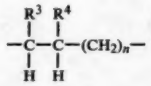
1. A compound represented by the formula (I) or a pharmacologically acceptable salt thereof:



(I)

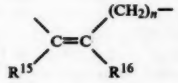
wherein R^1represents (1) an aliphatic hydrocarbon group which may be substituted by cyano, carbamoyl, heteroaryl, hydroxyl, alkoxy, amino, alkyl, carboxyl, ester or amido group, (2) an aralkyl group which may be substituted by halogen, lower alkyl, phenyl, O-cyanophenyl, alkoxy or nitro group or (3) an aryl group which may be substituted by halogen, lower alkyl, alkoxy or nitro group R^2 represents (1) hydrogen, (2) an aliphatic hydrocarbon group having one or more substituents selected from cyano, carbamoyl, aryl, hydroxyl, alkoxy, amino, alkyl, carboxyl, ester or amido group, (3) an aryl group which may be substituted by haloge, lower alkyl, alkoxy or nitro group, (4) a group of the formula:

wherein each of R^8 and R^9 is hydrogen, a lower alkyl group having about 1 to 8 carbon atoms or a fatty acid-derived acyl group having about 1 to 8 carbon atoms, (5) a formyl group, (6) a nitro group or (7) a halogeno group; A represents (1) a formula:

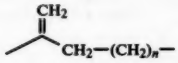


wherein R^3 represents hydrogen, a lower alkyl group which may be substituted by halogen atom, lower alkylthio or phenylthio group, —YR wherein Y is —O—or —S—and R^5 is hydrogen, lower alkyl group of 1 to 4 carbon atoms or an aryl

group which may be substituted by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or phenyl which may be substituted by one to three halogens, or R^3 is a fatty acid-derived lower acyl group of 1 to 4 carbon atoms; n represents an integer of 0 to 2, (2) a formula:



wherein R^{15} and R^{16} represent hydrogen atoms, lower alkyl group of 1 to 4 carbon atoms, —$COOR^{17}$ wherein R^{17} is hydrogen atom or lower alkyl, or —NHR^{18} wherein R^{18} is hydrogen atom, lower alkyl or lower alkanoyl; n represents an integer of 0 to 2 or (3) a formula:



wherein n represents an integer of 0 to 2; and m represents an integer of 0 to 2.

5,082,839

THIENO-TRIAZOLO-1,4-DIAZEPINO-2-CARBOXYLIC ACID AMIDES

Karl-Heinz Weber, Gau-Algesheim; Albrecht Harreus, Ludwigshafen; Jorge Casals-Stenzel, Munich; Gojko Muacevic, Ingelheim am Rhein; Wolfgang Tröger, Stromberg, and Gerhard Walther, Bingen am Rhein, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

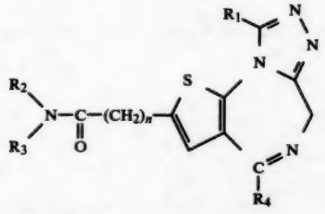
Division of Ser. No. 252,725, Oct. 3, 1988, Pat. No. 4,968,794, which is a continuation-in-part of Ser. No. 821,640, Jan. 23, 1986, abandoned. This application Jun. 15, 1990, Ser. No. 539,416

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1985, 3502392

Int. Cl.[5] A61K *31/33, 31/41, 31/55;* **C07D** *487/04*

U.S. Cl. 514—220 **7 Claims**

1. Thieno-triazolo-1,4-diazepino-2-carboxylic acid amides having the formula



wherein

R_1 represents hydrogen, a C_1–C_4 straight-chained or branched alkyl group which can optionally be substituted by halogen or hydroxy, cyclopropyl, C_1–C_3 alkoxy, or halogen:

R_2 and R_3, each independently, represent hydrogen, a C_1–C_4 straight-chained or branched alkyl or hydroxyalkyl group or both groups R_2 and R_3 together with the nitrogen atom represent a 5-, 6- or 7-membered ring which optionally contains a nitrogen, oxygen or sulphur atom as a further heteroatom, the second nitrogen atom optionally being substituted by a C_1–C_4 alkyl group:

R_4 represents alpha-pyridyl or a phenyl, in which the phenyl ring can be substituted in the 2-position or in the 2- and 6-positions by methyl, halogen, nitro or trifluoromethyl; and

n represents one of the numbers 0, 1, 2, 3, 4, 5, 6, 7 or 8.

5,082,840

MORPHOLINE COMPOUNDS AND TREATMENT

Jonathan R. Arch, Epsam, and Norman H. Rogers, Tadworth, both of England, assignors to Beecham Group p.l.c., Brentford, England

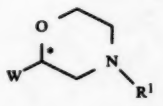
Continuation of Ser. No. 166,328, Mar. 10, 1988, Pat. No. 4,914,202. This application Aug. 29, 1989, Ser. No. 399,902

Claims priority, application United Kingdom, Mar. 10, 1987, 8705587; Feb. 12, 1988, 8803261

Int. Cl.[5] A61K *31/535;* **C07D** *413/04, 265/30, 265/32*

U.S. Cl. 514—233.5 **11 Claims**

7. A method for increasing the weight gain and/or improving feed utilization efficiency and/or increasing the lean body mass and/or decreasing birth mortality rate and increasing post-natal survival rate of livestock, which method comprises the administration to livestock of an effective, non-toxic amount of a compound of formula (I), or a veterinarily acceptable acid addition salt thereof;



(I)

wherein R^1 is phenyl, (C_{1-6}) alkyl, (C_{1-6}) alkyl or hydroxy substituted C_{1-6} alkyl and

W is phenyl, optionally substituted by halogen, hydroxy, amino, cyano and trifluoromethyl, phenoxymethyl optionally substituted on the phenyl group, or benzofuran-2-yl.

5,082,841

3-CARBONYL-4-AMINO-8-SUBSTITUTED QUINOLINE COMPOUNDS USEFUL IN INHIBITING GASTRIC ACID SECRETIONS.

Thomas H. Brown; Robert J. Ife, and Colin A. Leach, all of Welwyn, England, assignors to SmithKline Beecham Intercredit B.V., Welwyn Garden City, England

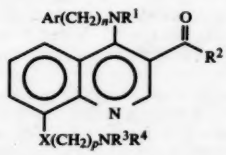
Filed Aug. 7, 1990, Ser. No. 564,218

Claims priority, application United Kingdom, Aug. 10, 1989, 8918265

Int. Cl.[5] C07D *215/42;* **A61K** *31/47*

U.S. Cl. 514—235.2 **18 Claims**

1. A compound of structure (I):



(I)

in which

Ar is a phenyl group optionally substituted by 1 to 3 substituents selected from C_{1-6}alkyl, C_{1-6}alkoxy, amino, C_{1-6}alkylthio, halogen, cyano, hydroxy, carbamoyl, carboxy, C_{1-6}alkanoyl or trifluoromethyl; n is 0 to 4;

R^1 is hydrogen or C_{1-6}alkyl;

R^2 is hydrogen, C_{1-6}alkyl, C_{1-6}alkoxy, C_{1-6}alkoxyC_{1-6}alkyl, C_{3-6}cycloalkyl, C_{3-6}cycloalkylC_{1-6}alkyl, phenyl, or phenylC_{1-6}alkyl;

X is CHOH, NR^1S, or O;

p is 1 to 6; and

R^3 and R^4 are the same or different and are each hydrogen, C_{1-4}alkyl, or optionally substituted phenylC_{1-4}alkyl or

together with the nitrogen atom to which they are attached form a pyrrolidino, piperidino, piperazino or morpholino ring, or a pharmaceutically acceptable salt thereof.

5,082,842

TRICYCLIC PYRIDONE DERIVATIVES

Ulrich Widmer, Rheinfelden, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

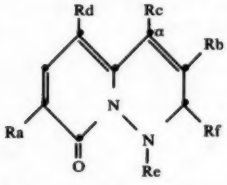
Division of Ser. No. 198,539, May 25, 1988, Pat. No. 4,889,854. This application Oct. 16, 1989, Ser. No. 422,197

Claims priority, application Switzerland, Jun. 12, 1987, 2206/87; Apr. 8, 1988, 1297/88

Int. Cl.[5] A61K *31/395*

U.S. Cl. 514—248 **28 Claims**

21. A method of treating muscle tension, stress, insomnia, anxiety or convulsion in a host requiring such treatment, which comprises administering to said host an effective amount of a compound of the formula (A)



(A)

wherein Ra is a phenyl, pyridyl or thienyl group which is unsubstituted or substituted by halogen, trifluoromethyl, nitro, lower alkyl or lower alkoxy, Rb and Rc together with the carbon atom denoted by α are a group of the formula $>C_\alpha$—S—CH=CH— (a), or $>C_\alpha$—CH=CH—S— (b) which is unsubstituted or substituted by halogen, trifluoromethyl, lower alkyl, lower alkoxy, nitro, amino or mono- or di(lower alkyl)amino, Rd is the group of the formula $—(A^1)_m—(CO)_n—(Q-{}^1A^2)_q—R^1$, m, n and q each are the number 0 or 1, A^1 is lower alkylene, A^2 is lower alkylene, a direct bond or the group —CO—, Q^1 is an oxygen atom or the group $—NR^2—$, R^1 is hydrogen, hydroxy, cyano, nitro, halogen, lower alkoxy, lower alkyl, lower alkoxycarbonyl, a phenyl group which is unsubstituted or substituted by halogen, trifluoromethyl, lower alkyl, lower alkoxy, nitro, amino or mono- or di(lower alkyl)amino, a group of the formula $—NR^3R^4$ or a 5-membered saturated, partially unsaturated or aromatic heterocycle selected from the group consisting of 2-oxazolinyl, 1,2,4-oxadiazolyl, 2-thiazolyl and 2-tetrahydrofuryl which is attached via a ring carbon atom and which is unsubstituted or substituted by one or two lower alkyl groups or by a (C_{3-6})-cycloalkyl, hydroxy, lower alkoxy, lower alkanoyloxy, lower hydroxyalkyl, lower alkoxyalkyl, lower alkanoyloxyalkyl, lower alkoxycarbonyl, lower alkanoyl, carbamoyl, mono- or di(lower alkyl)carbamoyl, oxo or alkylenedioxy group, R^2 is hydrogen, lower alkyl or a phenyl group which is unsubstituted or substituted by halogen, trifluoromethyl, lower alkyl, lower alkoxy, nitro, amino or mono- or di(lower alkyl)amino, R^3 and R^4 each, independently, is hydrogen, lower alkyl, lower alkoxyalkyl, lower dialkoxyalkyl, lower alkylenedioxyalkyl, lower cyanoalkyl, lower haloalkyl, lower hydroxyalkyl, lower dihydroxyalkyl, lower alkanoyl, lower alkoxycarbonyl or a (C_{3-7})-cycloalkyl group which is unsubstituted or substituted by hydroxy, lower alkoxy, lower alkanoyloxy, lower hydroxyalkyl, lower alkoxyalkyl, lower alkanoyloxy-alkyl, oxo, carbamoyl, mono- or di(lower alkyl)carbamoyl or by lower alkylenedioxy or R^3 and R^4 together with the nitrogen atom are a saturated N-heterocycle selected from the group consisting of 1-azetidinyl, 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, 4-thiomorpholinyl, 1-piperazinyl or 4-R^5-piperazinyl, which is unsubstituted or substituted by one or two lower alkyl groups or by one or two hydroxy, lower alkoxy, lower alkanoyloxy, lower hydroxyalkyl, lower alkoxyalkyl, lower alkanoyloxyalkyl, lower alkoxycarbonyl, lower alkanoyl, carbamoyl, mono- or di(lower alkyl)carbamoyl, oxo or lower alkylenedioxy group, R^5 is hydrogen, lower alkyl, lower hydroxyalkyl, lower alkoxyalkyl, lower alkanoyloxyalkyl, lower alkanoyl, lower alkoxycarbonyl, carbamoyl or mono- or di(lower alkyl)carbamoyl, Re is hydrogen, lower alkyl, lower alkanoyl, phenylcarbonyl, phenyl-(lower alkanoyl), phenyl-(lower alkyl) or lower alkenyl, or a phenylcarbonyl, phenyl-(lower alkanoyl) or phenyl-(lower alkyl) group which is substituted at the phenyl moiety by mono- or di(lower alkyl)amino, and Rf is hydrogen or lower alkyl, with the proviso that n is the number 0 when q is the number 1 and A^2 is the group —CO—; that R^1 has a significance different from cyano, nitro, halogen or lower alkoxycarbonyl when q is the number 1 or when q is the number 1 and A^2 is the group —CO—; and, that R^1 has a significance different from hydroxy, cyano, nitro, halogen, lower alkoxycarbonyl, lower alkoxy and $—NR^3R^4$ when q is the number 1 and A^2 is a direct bond, or a pharmaceutically acceptable acid addition salt of compound of formula A which has one or more basic substituents.

5,082,843

PYRAZINYL AND PYRIDAZINYL ETHERS

Ian A. Cliffe, Cippenham, England, assignor to John Wyeth and Brother Limited, Maindenhead, England

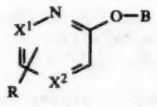
Division of Ser. No. 497,273, Mar. 22, 1990, Pat. No. 4,997,839, which is a division of Ser. No. 226,657, Aug. 1, 1988, Pat. No. 4,929,625. This application Oct. 30, 1990, Ser. No. 606,005

Claims priority, application United Kingdom, Aug. 4, 1987, 8718444; May 20, 1988, 8811975

Int. Cl.[5] C07D *453/02;* **A61K** *31/46*

U.S. Cl. 514—253 **12 Claims**

1. A pyrazinyl or pyridazinyl compound of the formula



(Ia)

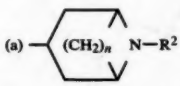
wherein

either X^1 is N and X^2 is CH or X1 is CH and X^2 is N

R is hydrogen, C_{1-4}alkyl, C_{1-4}alkoxy, amino, mono-C_{1-4}alkylamino, di(C_{1-4}alkyl)amino, fluorine, chlorine, trifluoromethyl, phenyl, mono-chloro- or fluorophenyl, C_{1-4}alkylphenyl, mono-C_{1-4}-alkoxyphenyl, carboxy, carboxamido, nitro, thiol, C_{1-4}-alkylthio, or C_{1-4}-alkoxycarbonyl;

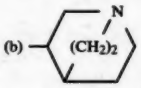
with the proviso that R is not hydrogen when X^1 is N and X^2 is CH; and

B is

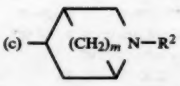


(II)

where n is 2, 3 or 4 and R^2 is hydrogen, C_{1-4}alkyl, C_{1-4}alkoxy, allyl, methallyl, cyclopentyl, cyclohexyl, cyclopentylmethyl, cyclohexylmethyl or benzyl,

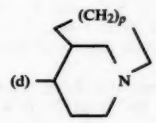


(III)



(IV)

where R^2 has the meaning given above and m is 1, 2 or 3 or



(V)

where p is 0, 1 or 2,

or a N-oxide of a pyrazinyl or pyridazinyl nitrogen thereof, or a pharmaceutically acceptable acid addition salt of a compound of formula I2 or of said N-oxide thereof.

5,082,844

PYRIDAZINONE DERIVATIVES

Kikuo Yasuda, Yokohama; Kenyu Shibata, Inagi; Nobuyoshi Minami, Yokohama; Toshimi Seki; Masafumi Shiraiwa, both of Kawasaki; Tomio Nakao, Inagi; Katsuhiko Miyasaka, Atsugi; Tsutomu Ishimori; Kotaro Gotanda, both of Kawasaki, and Takako Sasaki, Tokyo, all of Japan, assignors to Teikoku Hormone Mfg. Co., Ltd., Tokyo, Japan

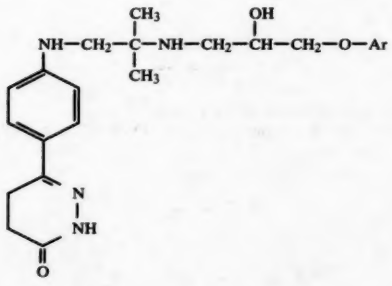
Filed Jun. 18, 1990, Ser. No. 539,741

Claims priority, application Japan, Jun. 19, 1989, 1-154452; Jun. 11, 1990, 2-149803

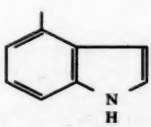
Int. Cl.[5] A61K *31/50*; C07D *401/12*

U.S. Cl. 514—253 **3 Claims**

1. A pyridazinone compound of the formula



wherein Ar is



or a pharmaceutically acceptable salt thereof.

5,082,845

THERAPEUTIC XANTHINE DERIVATIVES FOR THE TREATMENT OF PEPTIC ULCER DISEASE

Erhard Wolf, Hofheim am Taunus; Ulrich Gebert; Harald Furrer, both of Kelkheim, all of Fed. Rep. of Germany; Toshizo Tanaka; Masao Sakurai, both of Saitama, Japan, and Masayoshi Goto, Kanagawa, Japan, assignors to Hoechst Japan Limited, Tokyo, Japan

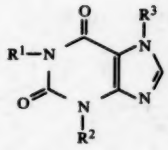
Filed Feb. 17, 1989, Ser. No. 311,910

Claims priority, application Japan, Feb. 19, 1988, 63-35484

Int. Cl.[5] A61K *31/52*; C07D *473/06*

U.S. Cl. 514—263 **8 Claims**

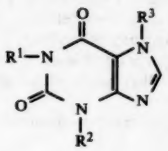
1. A compound of the formula I



(I)

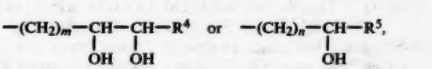
in which R^2 is $(C_1–C_4)$alkyl, R^3 is 5,6-dihydroxyhexyl or 5-hydroxyhexyl, and R^1 is alkenyl having 3 to 6 C-atoms.

5. A method for the treatment of a patient suffering from peptic ulcer disease, inclusive of irritations of the gastro-intestinal mucosa produced by drugs, which comprises administering to said patient an effective amount of at least one compound of the formula I



(I)

wherein R^1 is $(C_1–C_8)$alkyl or $(C_3–C_6)$alkenyl, R^3 is



and R^2 is $(C_1–C_4)$alkyl; R^4 and R^5 are each hydrogen or $(C_1–C_2)$alkyl; and m and n are each 1, 2, 3, 4, 5 or 6.

5,082,846

USE OF THE R-(+)-ISOMER OF 2-METHOXY-3-OCTADECYLOXY-PROPANOL-(1)-PHOSPHORIC ACID, MONOCHOLINE ESTER IN TREATING MULTIPLE SCLEROSIS

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz Ltd., Basel, Switzerland

Filed Aug. 30, 1990, Ser. No. 575,054

Int. Cl.[5] A61K *31/435*

U.S. Cl. 514—277 **11 Claims**

1. A pharmaceutical composition useful in treating multiple sclerosis comprising a pharmaceutically acceptable carrier or diluent and a therapeutically effective amount of the R-(+)-isomer of 2-methoxy-3-octadecyloxy-propanol-(1)-phosphoric acid, monocholine ester.

5,082,847

CARBOSTYRIL COMPOUNDS CONNECTED VIA AN OXYALKYL GROUP WITH A PIPERIDINE RING AND HAVING PHARMACEUTICAL UTILITY

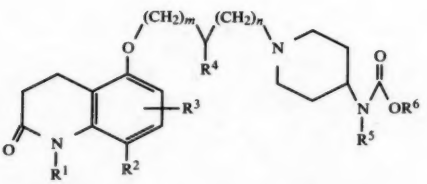
Jean-Claude Pascal, Cachan, France; Leslie Patmore, Edinburgh, Scotland; Jurg Pfister, Los Altos, Calif.; Dominique Blondet, Paris, and John M. Armstrong, Saint Remy les Chevreuse, both of France, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jul. 18, 1990, Ser. No. 555,201

Int. Cl.[5] C07D *215/22*; A61K *31/47*

U.S. Cl. 514—312 **77 Claims**

1. A compound of the formula:



wherein:

m is 0, 1, or 2;

n is 0, 1, or 2;

R^1 is hydrogen or lower alkyl;

R^2 is hydrogen, halogen, hydroxy, lower alkyl, lower alkoxy, aralkoxy, or acyloxy;

R^3 is hydrogen, halogen, lower alkyl, or lower alkoxy;

R^4 is hydrogen, hydroxy, lower alkyl, or acyloxy, provided that when R^4 is hydroxy or acyloxy, m and n are both 1;

R^5 is hydrogen or lower alkyl; and

R^6 is alkyl, hydroxyalkyl, alkoxyalkyl, or (dialkylamino)alkyl;

or a pharmaceutically acceptable acid addition salt or N-oxide thereof.

5,082,848

SUBSTITUTED 4-AMINOQUINOLINE DERIVATIVES AS GASTRIC ACID SECRETION INHIBITORS

Robert J. Ife, Stevenage; Thomas H. Brown, Tewin, and Colin A. Leach, Stevenage, all of England, assignors to Smith Kline & French Laboratories, Ltd., Welwyn Garden City, England

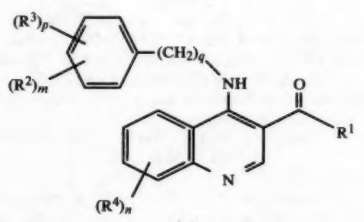
Filed Feb. 23, 1989, Ser. No. 315,369

Claims priority, application United Kingdom, Feb. 25, 1988, 8804446

Int. Cl.[5] **A61K** *31/45;* **C07D** *215/42*

U.S. Cl. 514—313 **21 Claims**

1. A compound of the structure (I):



wherein

R^1 is hydrogen, C_{1-6}alkyl, C_{1-6}alkoxyC_{1-6}alkyl, C_{3-6}cycloalkyl, C_{3-6}cycloalkyl-C_{1-6}alkyl, phenyl, phenyl C_{1-6}alkyl, the phenyl groups being optionally substituted by 1 to 3 substituents selected from C_{1-6}alkyl, C_{1-6}alkoxy, amino, C_{1-6}alkylthio, halogen, hydroxy, carbamoyl, carboxy, C_{1-6}alkanoyl, trifluoromethyl or cyano;

R^2 is hydroxyC_{1-6}alkyl, C_{1-6}alkoxyC_{1-6}alkyl or two adjacent R^2 groups together form a C_{1-4}alkylenedioxy group;

R^3 is hydrogen, C_{1-6}alkyl, C_{1-6}alkoxy, amino, C_{1-6}alkylthio, halogen, cyano, hydroxy, C_{1-6}alkanoyl, or trifluoromethyl;

R^4 is hydrogen, C_{1-6}alkyl, phenyl, C_{1-6}alkoxy, C_{1-6}alkylthio, C_{1-6}alkanoyl, amino, C_{1-6}alkylamino, di-C_{1-6}alkyl amino, halogen, or trifluromethyl;

n is 1 or 2;

q is 0 or 4;

m is 1, 2, or 3; and

p is 1, 2, 3, or 4 provided that m+p is not greater than 5;

or a salt thereof.

5,082,849

QUINOLINYL-BENZOPYRAN DERIVATIVES AS ANTAGONISTS OF LEUKOTRIENE D4

Fu-Chich Huang, 1333 Tanglewood Dr., Gwynedd, Pa. 19436; Henry F. Campbell, 767 Hazelwood, North Wales, Pa. 19454, and Keith S. Learn, Box 2, Gottschall Rd., Perkiomenville, Pa. 18074

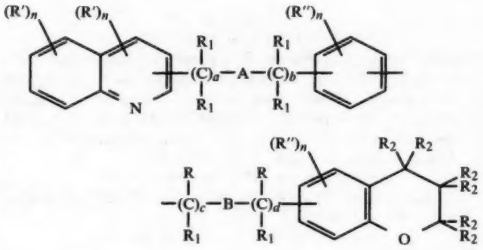
PCT No. PCT/US90/03847, § 371 Date Mar. 8, 1991, § 102(e) Date Mar. 8, 1991, PCT Pub. No. WO91/01123, PCT Pub. Date Feb. 7, 1991

Continuation-in-part of Ser. No. 379,528, Jul. 13, 1989, Pat. No. 4,977,162. This PCT application Jul. 9, 1990, Ser. No. 659,403

Int. Cl.[5] **C07D** *405/12;* **A61K** *31/47*

U.S. Cl. 514—314 **13 Claims**

1. A compound of the formula:

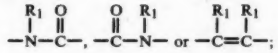


where:

A is O, S,

or a carbon-carbon single bond;

B is a carbon-carbon single bond, O, S, SO, SO_2, NR_1,



D is O, S, NR_1,

or a carbon-carbon single bond;

E is a carbon-carbon single bond or

a is 0–1: b is 0–1; c is 0–3: d is 0–3: e is 0–3: f is 0–3; n is 0–2;

R′ is independently hydrogen, alkyl, hydroxy, alkoxy, carboxy, carbalkoxy, halo, nitro, haloalkyl, cyano or acyl;

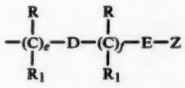
R″ is independently hydrogen, hydroxy, alkoxy, halo, haloalkyl, or $-(CH_2)_x$-M-$(CH_2)_y$-X;

R_1 is independently hydrogen, alkyl or aralkyl;

R_2 is hydrogen or R_3;

vicinal R_2 groups may form a double bond; geminal R_2 groups may form a keto group;

R_3 is



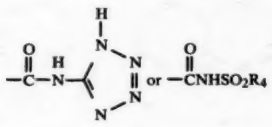
provided at least one R_2 group and no more than two non-geminal R_2 groups are R_3 at the same time;

R is independently hydrogen or $-(CH_2)_x$-M-$(CH_2)_y$-X provided M and A or B are not geminal oxygen atoms;

x is 0–3; y is 0–3;

M is a carbon-carbon single bond, O, S or NR_1;

X is hydrogen, alkyl, alkenyl, cycloalkyl, aryl, aralkyl, hydroxy, alkoxy, aralkoxy, amino, mono- and di-alkylamino, aralkylamino, acylamino, $—CONR_1R_1$, —COOR, CN, tetrazolyl,



where R_4 is hydrogen, alkyl, haloalkyl, phenyl or benzyl;

vicinal R groups together may be $-(CH_2)_y$- where y is 1–4, thus forming a 3–6 membered ring;

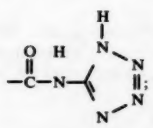
geminal R_1 and R groups may together form a spiro substituent, $-(CH_2)_z$-, where z is 2–5;

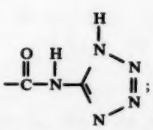
geminal R_1 or R_1 and R groups may together form an alkylidenyl substituent,

Z is —$COOR_1$, —CN,

where R_4 is as described above,

—OR_1, tetrazolyl, substituted tetrazolyl where the substituent may be alkyl, carboxyalkyl or carbalkoxyalkyl or





or a pharmaceutically acceptable salt thereof.

12. A method for the treatment of hypersensitive ailments in humans and mammals comprising administering thereto an effective amount of a compound of the formula according to claim **1**.

5,082,850

PIPERIDINE DERIVATIVES AND THERAPEUTIC AND PREVENTIVE AGENTS FOR ARRHYTHMIA CONTAINING SAME

Hitoshi Oinuma, Tsukuba; Motosuke Yamanaka, Abiko; Kazutoshi Miyake, Ushiku; Tomonori Hoshiko, Kitasouma; Norio Minami, Tsukuba; Tadao Shoji, Inashiki; Yoshiharu Daiku, Tsukuba; Kohei Sawada, Tsukuba, and Kenichi Nomoto, Tsuchiura, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

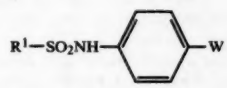
Division of Ser. No. 234,468, Aug. 19, 1988. This application Aug. 22, 1990, Ser. No. 571,313

Claims priority, application Japan, Aug. 24, 1987, 62-209726; Aug. 24, 1987, 62-209727; Aug. 24, 1987, 62-209728

Int. Cl.[5] C01D *211/32;* A61K *31/445*

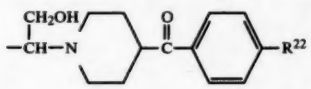
U.S. Cl. 514—317 **6 Claims**

1. A piperidine compound having the below shown generic formula and a pharmacologically acceptable salt thereof:



(XX)

in which R1 is a lower alkyl and W is:



R22 is hydrogen, a halogen, a lower alkyl, a lower alkoxy or hydroxy.

5,082,851

PHARMACEUTICAL COMPOSITION FOR PROTECTING THE HEART COMPRISING A HETEROCYCLIC ETHYLENEDIAMINE DERIVATIVE AND METHODS FOR THE USE THEREOF

Jerachmiel Y. Appelbaum; Mordechai Chevion, and Gideon Uretzky, all of Jerusalem, Israel, assignors to Hadassah Medical Organization and Yissum Research and Development Corporation of the Hebrew University of Jerusalem, both of Jerusalem, Israel

Filed Feb. 7, 1990, Ser. No. 477,046

Claims priority, application Israel, Feb. 20, 1989, 89349

Int. Cl.[5] A61K *31/44*

U.S. Cl. 514—332 **6 Claims**

1. A composition for protecting the heart from myocardial ischemia and reperfusion injury comprising a myocardial ischemia and reperfusion injury preventing effective amount of N,N,N', N'-tetrakis-(2-pyridylmethyl)-ethylenediamine and a pharmacologically acceptable carrier.

5,082,852

CYCLOPROPANECARBOXAMIDES AND THEIR USE FOR CONTROLLING PESTS

Uwe Kardorff, Mannheim; Hans-Juergen Neubauer, Muenster-Hiltrup; Joachim Leyendecker, Ladenburg; Christoph Kuenast, Otterstadt; Peter Hofmeister, Neustadt, and Wolfgang Krieg, Weingarten, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

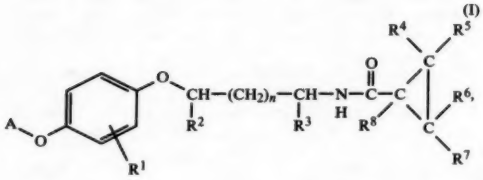
Continuation of Ser. No. 376,768, Jul. 7, 1989, abandoned. This application Aug. 15, 1990, Ser. No. 568,547

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1988, 3824788

Int. Cl.[5] A01N *43/40*

U.S. Cl. 514—351 **15 Claims**

1. A cyclopropanecarboxamide of formula (I)



(I)

wherein:

R^1 is hydrogen, halogen or C_1–C_3-alkyl;

R^2 and R^3 are each independently hydrogen or C_1–C_4-alkyl;

R^4 to R^8 are each independently hydrogen, halogen, or C_1–C_4-alkyl;

A is a hetaryl radical which is one member selected from the group consisting of pyrid-2-yl, pyrid-3-yl, and pyrid-4-yl, wherein said hetaryl radical is either unsubstituted or substituted by a group R^9 which is hydrogen, halogen, C_1–C_4-alkyl, C_1–C_3-haloalkyl, C_1–C_4-alkoxy, C_1–C_3-haloalkoxy, C_3–C_6-cycloalkyl, cyano, or nitro; and

n is 0 or 1.

5,082,853

BRAIN-SPECIFIC ANALOGUES OF CENTRALLY ACTING AMINES

Nicholas S. Bodor, 7211 SW. 97th Ln., Gainesville, Fla. 32608

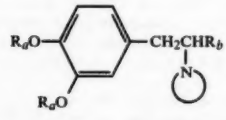
Division of Ser. No. 208,872, Jun. 20, 1988, Pat. No. 4,933,438, which is a division of Ser. No. 785,903, filed as PCT/US85/00236, Feb. 15, 1985, Pat. No. 4,771,059, which is a continuation-in-part of Ser. No. 584,800, Feb. 29, 1984, abandoned. This application Apr. 4, 1990, Ser. No. 505,910

The portion of the term of this patent subsequent to Sep. 13, 2005, has been disclaimed.

Int. Cl.[5] A61K *31/44*; C07D *211/90*

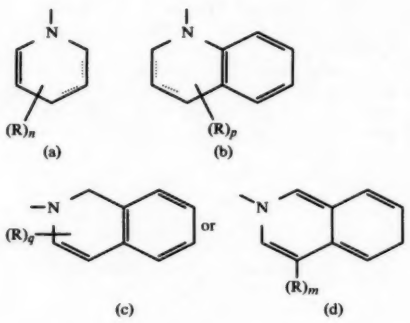
U.S. Cl. 514—355 **26 Claims**

1. A compound having the formula



or a non-toxic pharmaceutically acceptable salt thereof, wherein each —OR_a is independently —OH or —OY wherein Y is a hydrolytically or metabolically cleavable hydroxyl protective group; R_b is H, —COOH or —COOY' wherein Y' is a hydrolytically or metabolically cleavable carboxyl protective group; and

is a radical of the formula



(a) (b) (c) (d)

wherein the dotted line in formula (a) indicates the presence of a double bond in either the 4 or 5 position of the dihydropyridine ring; the dotted line in formula (b) indicates the presence of a double bond in either the 2 or 3 position of the dihydroquinoline ring system; m is zero or one; n is zero, one or two; p is zero, one or two, provided that when p is one or two, each R in formula (b) can be located on either of the two fused rings; q is zero, one or two, provided that when q is one or two, each R in formula (c) can be located on either of the two fused rings; and each R is independently selected from the group consisting of halo, C_1–C_7 alkyl, C_1–C_7 alkoxy, C_2–C_8 alkoxycarbonyl, C_2–C_8 alkanoyloxy, C_1–C_7 haloalkyl, C_1–C_7 alkylthio, C_1–C_7 alkylsulfinyl, C_1–C_7 alkylsulfonyl, —CH=NOR'" wherein R'"is H or C_1–C_7 alkyl, and —CNR'R" wherein R' and R", which can be the same or different, are each H or C_1–C_7 alkyl.

5,082,854

METHOD OF STIMULATING SUPEROXIDE GENERATION

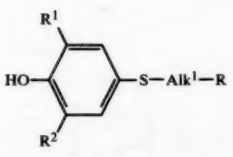
Richard A. Mueller, Glencoe; Akira Nakao, Skokie, and Richard A. Partis, Evanston, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Sep. 7, 1990, Ser. No. 579,458

Int. Cl.[5] A61U *31/44, 31/495*

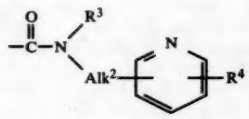
U.S. Cl. 514—357 **3 Claims**

1. A method of stimulating superoxide generation which comprises administering to a mammal in need of such treatment an amount of a compound of the Formula I



(I)

or a pharmaceutically acceptable salt or stereoisomer or geometric isomer thereof; wherein R^1 and R^2 are the same or different and independently represent tert-alkyl or phenyl; Alk^1 represents straight or branched chain alkylene of 1 to 10 carbon atoms; and R represents:



a)

wherein R^3 is hydrogen or alkyl of 1 to 4 carbon atoms, Alk^2 is straight or branched chain alkylene of 1 to 4 carbon atoms, and R^4 is hydrogen or alkyl of 1 to 4 carbon atoms;
which is effective to stimulate superoxide generation.

5,082,855

FUNGICIDAL AGENTS

Wilhelm Brandes, Leichlingen; Gerd Hänssler, Leverkusen; Paul Reinecke, Leverkusen; Hans Scheinpflug, Leverkusen, and Graham Holmwood, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

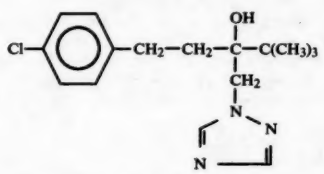
Division of Ser. No. 487,680, Mar. 2, 1990, Pat. No. 4,990,527, which is a division of Ser. No. 330,331, Mar. 29, 1989, Pat. No. 4,933,337, which is a division of Ser. No. 193,437, May 12, 1988, Pat. No. 4,845,111, which is a continuation of Ser. No. 89,698, Aug. 26, 1987, abandoned, which is a division of Ser. No. 801,549, Nov. 25, 1985, abandoned, which is a continuation of Ser. No. 646,591, Aug. 31, 1984, abandoned. This application Sep. 24, 1990, Ser. No. 587,193

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1983, 3333411

Int. Cl.[5] A01N *37/52, 43/64*

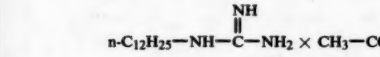
U.S. Cl. 514—383 **2 Claims**

1. A synergistic fungicidal composition comprising a fungicidally effective amount of



(i)

or an addition product thereof with an acid or metal salt and (ii) a guanidine derivative of the formula,



wherein the synergistic weight ratio of (i):(ii) is about 1:1.

5,082,856

PYRROLECARBOXYLIC ACID DERIVATIVES

Masao Taniguchi, Machida; Kohei Umezu, Yokohama; Tadashi Shirasaka, Machida; Shinya Inoue; Tetsuro Shinpuku, both of Yokohama; Masayuki Mitsuka, Machida, and Mayumi Hirata, Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

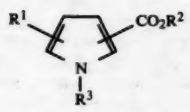
Filed Jun. 22, 1989, Ser. No. 369,816

Claims priority, application Japan, Jun. 23, 1988, 63-155689; Dec. 22, 1988, 63-324469; Apr. 7, 1989, 1-88512; May 31, 1989, 1-137644

Int. Cl.[5] A61K *31/40;* **C07D** *207/333*

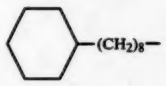
U.S. Cl. 514—423 **12 Claims**

3. A pharmaceutical composition for treating hyperlipemia and/or arteriosclerosis, comprising: a therapeutically effective amount of a pyrrolecarboxylic acid derivative represented by the formula (I):



(I)

wherein R^1 is a hydrogen atom, an alkyl group of 10 to 16 carbon atoms,



or an alkenyl group of 8 to 16 carbon atoms, R^2 is a hydrogen atom, a phenyl group, or an alkyl group of 1 to 10 carbon atoms unsubstituted or substituted with a halogen atom, hydroxyl group, amino group, alkylamino group of 1 to 5 carbon atoms, carbamoyl group, C_1–C_5-alkylcarbonylamino group, alkylthio group of 1 to 5 carbon atoms, mercapto group, a C_1–C_5-alkylcarbonyloxy group or aminocarbonyloxy group, and R^3 is an alkyl group of 10 to 16 carbon atoms or an alkenyl group of 10 to 16 carbon atoms, provided that, when R^1 is a group other than a hydrogen atom, R^1 is not adjacent to CO_2R^2, or a pharmaceutically acceptable salt thereof, in admixture with a pharmaceutically acceptable carrier or diluent.

5,082,857

CHEMICAL COMPOUND

Hirofumi Nakano; Mitsunobu Hara; Yohichi Uosaki, all of Tokyo; Isao Kawamoto, Kanagawa; Keiiechi Takahashi, and Katsushige Gomi, both of Shizuoka, all of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Japan

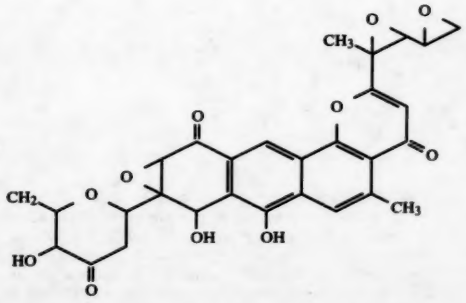
Filed Nov. 13, 1990, Ser. No. 612,317

Claims priority, application Japan, Nov. 13, 1989, 1-294290

Int. Cl.[5] A61K *31/35;* **C07D** *311/78*

U.S. Cl. 514—453 **3 Claims**

1. A compound of formula:



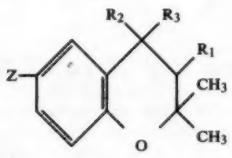
5,082,858

NOVEL CHROMAN DERIVATIVES ACTIVE ON THE CENTRAL NERVOUS SYSTEM, THEIR METHOD OF PREPARATION AND PHARMACEUTICAL COMPOSITIONS IN WHICH THEY ARE PRESENT

Georges Garcia; Alain D. Malta, both of Saint-Gely-du-Fesc, and Philippe Soubrie, St. Mathieu de Treviers, all of France, assignors to Sanofi, Paris, France

Filed Nov. 22, 1989, Ser. No. 463,090
Claims priority, application France, Nov. 23, 1988, 88 15284
Int. Cl.[5] A61K *31/35;* C07D *311/68*
U.S. Cl. 514—456 6 Claims

1. A compound of the formula



(I)

in which:

Z represents a halogen or a cyano, acetyl, trifluoroacetyl, nitro, C_1–C_4 alkylthio, carboxyl, phosphono, dialkoxyphosphonyl or alkoxycarbonyl group, the alkylthio and alkoxy groups containing from 1 to 3 carbon atoms;

R_1 denotes a hydroxyl group and R_2 represents hydrogen, or R_1 and R_2 taken together form an additional bond between the carbon atoms by which they are carried; and

R_3 represents

a group NH—X—R_4, in which X denotes a direct bond and R_4 represents a phenyl group which is monosubstituted or disubstituted by a halogen, a nitro group, a trifluoromethyl group, an amino group, a group —$N(Alk)_2$, or a group —COOAlk with Alk denoting a C_1–C_4 alkyl group;

or a pharmaceutically acceptable salt thereof.

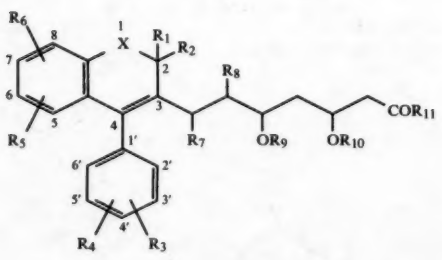
5,082,859

DERIVATIVES OF BENZOCYCLOALKENYLDIHYDROXYALKANOIC ACIDS AND MEDICATIONS CONTAINING THEM

Didier Festal, Ecully; Jean-Yves Nioche, Limonest; Denis Descours, Villeurbanne; Robert Bellemin, Lyons, and Jacques Decerprit, Neyron, all of France, assignors to Lipha, Lyonnaise Industrielle Pharmaceutique, Lyons, France

Filed Jan. 24, 1990, Ser. No. 469,121
Claims priority, application France, Jan. 24, 1989, 89 00790
Int. Cl.[5] A61K *31/335;* C07D *333/34*
U.S. Cl. 514—456 16 Claims

1. A compound formula 1,



1

in which: X denotes an oxygen; R_1 and R_2, which are identical or different, denote hydrogen atoms or alkyl radicals containing 1 to 3 carbon atoms; R_1 and R_2 may also together form a —$(CH_2)_n$— alkylene chain in which n is 4 or 5 optionally, substituted symmetrically by one or two alkyl radicals containing 1 to 3 carbon atoms; R_3 and R_4, which may be identical or different, denote hydrogen, fluorine, chlorine or bromine atoms, CF_3 radicals, N,N-dialkylamino containing 1 to 3 carbon atoms, alkyl containing 1 to 4 carbon atoms, alkoxy containing 1 to 5 carbon atoms, phenyl optionally substituted by at most two substituents which are identical or different and denote C_{1-3} alkyl radicals or fluorine or chlorine atoms, it being understood that when one of the substituents R_3 and R_4 denotes a CF_3, N,N-dialkylamino, phenyl or substituted phenyl radical, it is present on the 3′, 4′ or 5′ vertex and the other substituent denotes a hydrogen atom; R_5 and R_6, which may be identical or different, denote hydrogen, fluorine, chlorine or bromine atoms or the radicals: CF_3, C_{1-3} alkyl, C_{1-3} alkoxy or phenyl, optionally substituted by one or two C_{1-3} alkyl radicals, C_{1-3} alkoxy or fluorine or chlorine atoms, on condition that when one of the substituents R_5 and R_6 denotes CF_3, phenyl or substituted phenyl radicals, it is present on the vertex 6 or 7 and the other denotes a hydrogen atom; each of the substituents R_7 and R_8 denotes a hydrogen atom or, together with the existing C—C bond they form a double bond of trans (E) geometry; each of the substituents R_9 and R_{11} denotes a hydrogen atom, R_{11} denoting, with the CO group to which it is bonded, a free acid, ester, amide or acid salt functional group or forming a δ-lactone ring with R_9.

5,082,860

USE OF ETHYL 2-[4-(3,5-DIFLUOROPHENOXY)PHENOXY]ETHYLCARBAMATE FOR CONTROLLING CICADAS WHICH DAMAGE RICE CROPS

Friedrich Karrer, Zofingen, and Alfred Rindlisbacher, Muttenz, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 499,125, Mar. 26, 1990, abandoned. This application Aug. 16, 1990, Ser. No. 568,373
Claims priority, application Switzerland, Mar. 30, 1989, 1161/89
Int. Cl.[5] A01N *47/10*
U.S. Cl. 514—486 2 Claims

1. A method of controlling pests selected from cicadas of the genus Nilaparvata (family Delphacidae) which damage rice crops, which comprises treating said pests, or various development stages thereof or their habitat, with an insecticidally effective amount of ethyl 2-[4-(3,5-difluorophenoxy)phenoxy]-ethylcarbamate or with a composition containing an insecticidally effective amount of this compound as active ingredient, and a carrier therefor or other adjuvant.

5,082,861

METHOD FOR THE PREVENTION AND CONTROL OF EPILEPTIC SEIZURE ASSOCIATED WITH COMPLEX PARTIAL SEIZURES

R. Duane Sofia, Willingboro, N.J., assignor to Carter-Wallace, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 412,964, Sep. 26, 1989, Pat. No. 4,978,680. This application Dec. 7, 1990, Ser. No. 624,041
Int. Cl.[5] A61K *31/24*
U.S. Cl. 514—534 3 Claims

1. A composition in dosage unit form for the treatment of partial complex seizures comprising a gelatin capsule containing about 25 to 500 milligrams 2-phenyl-1,3-propanediol dicarbamate.

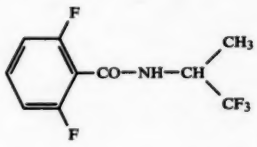
5,082,862

N-SUBSTITUTED BENZAMIDES

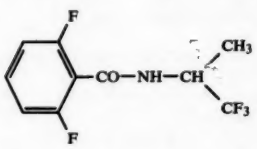
Horst Tarnow, and Bernhard Homeyer, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 27,706, Mar. 19, 1987, Pat. No. 4,840,969.
This application Jan. 4, 1989, Ser. No. 293,259
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1986, 36111937
Int. Cl.[5] C07C *233/66*; A01N *37/20, 37/18*
U.S. Cl. 514—617 3 Claims

1. An N-substituted benzamide of the formula



2. An insecticidal or nematicidal composition comprising an insecticidal or nematicidal effective amount of



in admixture with an extender.

5,082,863

PHARMACEUTICAL COMPOSITION OF FLORFENICOL

Henry M. Apelian, Clark; David Coffin-Beach, Kendall Park, and Abu S. Huq, Plainsboro, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Aug. 29, 1990, Ser. No. 574,430
Int. Cl.[5] A61K *31/00*
U.S. Cl. 514—618 5 Claims

1. An injectable pharmaceutical composition for veterinary use comprising:

10 to 50% by weight of florfenicol;

10 to 65% by weight of a pyrrolidone solvent selected from the group consisting of 2-pyrrolidone and N-methyl-2-pyrrolidone;

5 to 15% by weight of a viscosity reducing agent selected from the group consisting of ethanol and propylene glycol:

5 to 40% by weight of polyethylene glycol having an average molecular weight between 200 and 400.

5,082,864

STABILIZED SOLUTIONS OF PSYCHOTROPIC AGENTS

Petrus J. M. Van den Oetelaar, Heesch, and Maria M. F. Mentink, Oss, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Dec. 3, 1990, Ser. No. 621,480
Claims priority, application European Pat. Off., Dec. 6, 1987, 89.203092.5
Int. Cl.[5] A61K *31/135*
U.S. Cl. 514—646 9 Claims

1. A stable aqueous preparation comprising: a stabilizer selected from the group consisting of L-methionine, D-methionine and mixtures thereof in admixture with water and a therapeutically useful concentration of at least one tetracyclic nitrogen heterocycle selected from the group consisting of mirtazapine, mianserin and setiptiline, wherein the stabilizer is present in a concentration sufficient to stabilize the tetracyclic nitrogen heterocycle for a period of time longer than without the stabilizer under the same environmental conditions.

5,082,865

AVAROL AND ITS PRODUCTION AND USE AS AN ANTITUMOR AGENT (I)

Werner E. G. Müller, Semmelweisstr. 12, 6200 Wiesbaden-Biebrich; Rudolf K. Zahn, Oderstr. 12, 6200 Wiesbaden, and Eckart Eich, Rosmerthastr. 84, 6500 Mainz 21, all of Fed. Rep. of Germany

Division of Ser. No. 820,440, Jan. 17, 1986, Pat. No. 4,946,869.
This application Dec. 29, 1989, Ser. No. 458,948
The portion of the term of this patent subsequent to Aug. 7, 2007, has been disclaimed.
Int. Cl.[5] A61K *31/045*
U.S. Cl. 514—729 3 Claims

2. A method of combating tumor cells, the growth of which is adversely affected by avarol and therefore susceptible thereto, comprising administering to the host an effective antitumor amount of avarol.

5,082,866

BIODEGRADABLE ABSORPTION ENHANCERS

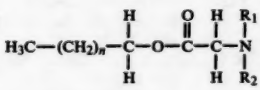
Ooi Wong, Lawrence, Kans.; Toshiaki Nishiahta, Ibaraki, Japan, and Joseph H. Rytting, Lawrence, Kans., assignors to Odontex, Inc., Lawrence, Kans.

Division of Ser. No. 201,029, Jun. 1, 1989, Pat. No. 4,980,378.
This application Aug. 14, 1990, Ser. No. 566,758
Int. Cl.[5] A61K *47/00*
U.S. Cl. 514—785 7 Claims

1. A pharmaceutical composition for topical administration of a pharmacologically active topical medicament, said composition comprising:

(a) a pharmacologically active topical medicament in an amount sufficient to achieve a desired pharmacologically effect; and

(b) a skin penetration enhancer compound of the formula:



wherein n is a whole integer and is 6, 8, 10, or 12, and R_1 and R_2 are both methyl or both ethyl.

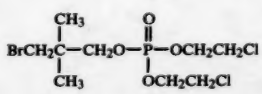
5,082,867

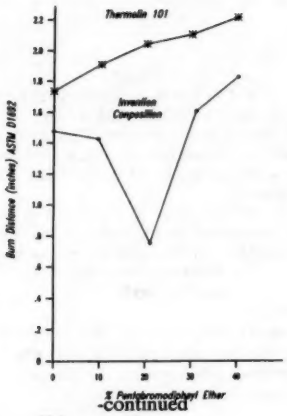
FLAME RETARDANT FLEXIBLE POLYURETHANE FOAM COMPOSITIONS

David E. May, Williamsport, and Richard S. Rose, West Lafayette, both of Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Filed Sep. 28, 1989, Ser. No. 413,701
Int. Cl.[5] C08K *5/52*
U.S. Cl. 521—67 7 Claims

1. A flame retardant additive composition comprising about 10 to 30% by weight pentabromodiphenyl ether and about 70 to 90% by weight of a non-mutagenic halogenated alkyl phosphate ester mixture consisting essentially of compounds of the formula:





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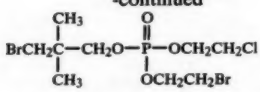
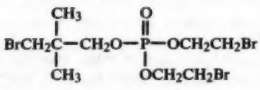


(II)



(III)

5,082,868

METHOD FOR THE PREPARATION OF POLYURETHANE FOAMS

Georg Burkhart, Essen; Jürgen Fock, Duesseldorf, and Volker Möhring, Muelheim/Ruhr, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 215,230, Jul. 5, 1988, abandoned. This application Jul. 21, 1989, Ser. No. 383,815

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1987, 3724717

Int. Cl.[5] C08G *18/04, 18/67;* C08J *9/00*

U.S. Cl. 521—114 **11 Claims**

1. In a method for the preparation of rigid polyurethane and/or polyisocyanurate foams from a foaming mixture comprising

(1) an at least difunctional polyisocyanate,

(2) a polyol with 3 to 8 hydroxyl groups, said polyol having a hydroxyl number of about 150 to 800,

(3) a catalyst,

(4) a blowing agent, and

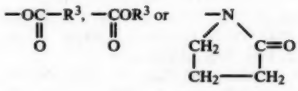
(5) a foam stabilizer devoid of silicon atoms, the improvement which comprises that the foam stabilizer is a copolymer which is the copolymerization product of

a) at least one vinyl monomer of the general formula

wherein

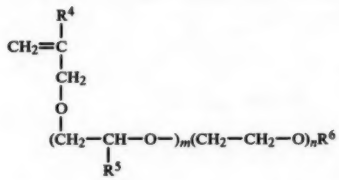
R^1 is hydrogen or methyl,

R^2 is



R^3 is alkyl with 1 to 4 carbon atoms, and

b) allyl- or methallylpolyoxyalkylene ether of the general formula



wherein

R^4 is selected from the group consisting of hydrogen and methyl,

R^5 is selected from the group consisting of methyl and ethyl,

R^6 is a group unable to react with an isocyanate group,

m is a number from 1 to 120,

n is a number from 1 to 90, and the quotient m/n has a value from 0.1 to 7,

the average molecular weight of b) being between 400 and 5,000,

the molar quotient a:b having a value from 1 to 10.

5,082,869

CROSS-LINKED POLYPROPYLENE COMPOSITIONS SUITABLE FOR THE PREPARATION OF FOAMED MATERIALS

Vittorio Braga, and Renato Ghisellini, both of Ferrara, Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Mar. 7, 1991, Ser. No. 666,103

Claims priority, application Italy, Mar. 9, 1990, 41004 A/90

Int. Cl.[5] C08J *9/00*

U.S. Cl. 521—134 **1 Claim**

1. Foamed materials, having density between 0.2 and 0.4 g/cm^3 comprising a mixture having melting index (at 230° C., 2.16 kg) between 0.001 and 600 kg/10′ consisting of:

A) 3–75% by weight of cross-linked polypropylene;

B) 97–25% by weight of non cross-linked polypropylene, having intrinsic viscosity in tetrahydronaphthalene at 135° C. between 0.50 and ½ dl/g.

5,082,870

METHOD OF MAKING AN ELECTRICALLY CONDUCTIVE POLYURETHANE FOAM

Hiroya Fukuda, Yokohama; Masayuki Akou, Ichikawa; Eiji Sawa, and Takashi Ohashi, both of Yokohama, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Mar. 2, 1990, Ser. No. 487,123

Claims priority, application Japan, Mar. 2, 1989, 1-48634

Int. Cl.[5] C08G *18/14;* C08F *36/00*

U.S. Cl. 521—159 **3 Claims**

1. In a method of making an electrically conductive polyurethane foam which comprises mixing an isocyanate terminated urethane prepolymer holding isocyanate monomers therein with an aqueous dispersion of electrically conductive carbon particles containing water in excess of the stoichiometric amount necessary to react with the isocyanate monomers in the urethane prepolymer and foaming the mixture, the improvement which comprises employing an urethane prepolymer prepared by reacting polyether polyol(s) holding poly(oxypropylene) chains and not more than 30 weight% of poly(ox-

yethylene) chains therein with a stoichiometrically excessive amount of an isocyanate component, and foaming the said mixture of the urethane prepolymer and the aqueous dispersion of electrically conductive carbon particles containing water in excess of the stoichiometric amount necessary to react with the isocyanate monomers in the urethane prepolymer in a closed mold having a capacity smaller than the volume of a foam which can be obtained by conducting the foaming of the said mixture of the urethane prepolymer and the aqueous dispersion of electrically conductive carbon particles freely under atmospheric pressure.

5,082,871

UV-ACTIVATION OF ADDITION CURE SILICON COATINGS

Richard P. Eckberg, Saratoga Springs, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 945,414, Dec. 22, 1986, abandoned. This application Dec. 4, 1989, Ser. No. 445,902

Int. Cl.[5] C08G *77/20, 77/06, 77/12*

U.S. Cl. 522—29 8 Claims

1. A process for rendering surfaces nonadherent to materials which would normally adhere thereto comprising the steps of:

(A) Providing a silicone release coating composition by combining:

(a) an olefinorganopolysiloxane having units of the structural formula:

$$R_aR^1_bSiO_{4-a-b/2}$$

(b) an organohydrogenpolysiloxane having units of the structural formula:

$$R_aH_bSiO_{4-a-b/2}$$

wherein R is selected from the group consisting of a monovalent hydrocarbon radical, a halogenated monovalent hydrocarbon radical, a cyanoalkyl radical and mixtures thereof, R^1 is an olefinic hydrocarbon radical, wherein a has a value of from 0 to 3, inclusive, b has a value of from 0.005 to 2.0, inclusive, and the sum of a and b is equal to from 0.8 to 3, inclusive;

(c) a sufficient amount of a platinum metal catalyst to cause the co-reaction of (a) and (b); and

(d) a dialkylacetylenedicarboxylate having the general formula:

$$ROOCC{\equiv}CCOOR$$

where R is as defined above and wherein said dialkylacetylene-dicarboxylate is present in an amount effective for inhibiting premature gelation but insufficient for preventing cure at elevated temperature; wherein said silicone release coating has a viscosity of, approximately, 25 to 5000 centipoise at 25° C.;

B. coating said silicone release coating on a suitable surface at a thickness of, approximately, 0.005 to 2.0 mils;

C. curing said silicone release coating with an amount of ultraviolet light effective for overcoming the cure retarding properties of said dialkylacetylenedicarboxylate wherein the temperature of the coating during cure is maintained within a range which is insufficient to effect thermal cure of the coating.

5,082,872

INFUSIBLE PRECERAMIC POLYMERS VIA ULTRAVIOLET TREATMENT IN THE PRESENCE OF A REACTIVE GAS

Gary T. Burns, Midland, Mich.; Leslie D. Fontaine, Blue Springs, Mo., and Ronald S. Reaoch, Elizabethtown, Ky., assignors to Dow Corning Corporation, Midland, Mich.

Filed Nov. 12, 1987, Ser. No. 119,599

Int. Cl.[5] C08K *1/00;* C08J *3/28*

U.S. Cl. 522—77 31 Claims

1. A method of rendering a preceramic polysilane infusible prior to pyrolysis, which method comprises ultraviolet irradiation of the preceramic polysilane in the presence of a reactive gas selected from the group consisting of ethylene, 1,3-butadiene, 2-methyl-1,3-butadiene, 1,4-pentadiene, silane, chlorosilane, dichlorosilane, boron trichloride, oxygen and water mixture, acetylene, and tetravinylsilane for a time sufficient to render the preceramic polysilane infusible.

5,082,873

UV CURABLE SILICONE EMULSIONS

Donald T. Liles, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 355,223, May 22, 1989. This application Oct. 30, 1990, Ser. No. 605,896

Int. Cl.[5] C08G *77/06;* C08K *3/30*

U.S. Cl. 522—86 20 Claims

1. An aqueous silicone emulsion which dries to an elastomer comprising the product produced by

(A) homogenizing in water a mixture of

(I) 100 parts by weight of hydroxyl endblocked polydiorganosiloxane (1),

(II) 0.1 to 10 parts by weight of siloxane or siloxane precursor containing unsaturated hydrocarbon groups having from 2 to 6 carbon atoms (2), and

(III) functional silicone selected from the group consisting of 0.1 to 10 parts by weight of organosilicon hydride (3) and from 0.1 to 5.0 part by weight of mercaptoalkylsilicone (4)

(IV) sufficient surfactant (5) to polymerize the ingredients in the desired time and to lower the pH to below 5, and

(V) sufficient photoinitiator (6) to provide the desired cure rate,

(B) emulsion polymerizing the mixture of (A) to produce a copolymer of ingredients (1), (2), and (3) or (4),

(C) terminating polymerization by raising the pH to greater than 5, then

(D) photochemically crosslinking the copolymer of

(B) by exposure to ultraviolet light,

to give an emulsion comprising a continuous water phase and a dispersed phase comprising a crosslinked polydiorganosiloxane.

5,082,874

ARYLOXY POLYVINYL ETHERS

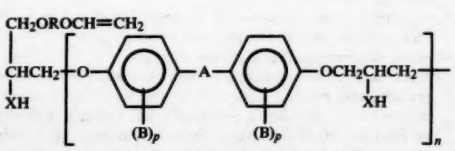
Kou-Chang Liu, Wayne; Fulvio J. Vara, Chester, and James A. Dougherty, Pequannock, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Feb. 6, 1990, Ser. No. 475,535

Int. Cl.[5] C08F *2/46, 283/00*

U.S. Cl. 522—100 11 Claims

1. An aryloxy polyvinyl ether having the formula



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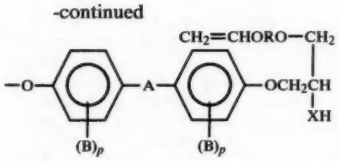


wherein R is a linear, branched or cyclic radical having from 2 to 20 carbon atoms and is selected from the group of alkylene, alkyleneoxy alkylene, polyalkyleneoxy alkylene, arylene, alkarylene and aralkylene; X is oxygen or sulfur; A is branched or linear alkylene having from 1 to 10 carbon atoms; B is halo or lower alkyl; n has a value of from 1 to 20 and p has a value of from 0 to 4.

5,082,875

SANITARY RUBBER ARTICLE

Masao Tajima, Tokyo, Japan, assignor to Kabushiki Kaisha Toritsu Industry, Tokyo, Japan

Division of Ser. No. 172,966, Mar. 29, 1988, Pat. No. 4,833,206, which is a continuation of Ser. No. 833,713, Feb. 27, 1986, abandoned. This application Apr. 17, 1989, Ser. No. 338,695

Int. Cl.[5] C08L *23/04, 23/00;* **F61J** *1/00;* **C08K** *3/00*

U.S. Cl. 523—103 **3 Claims**

1. A sanitary article consisting of a rubber composition consisting essentially of a synthetic rubber, an inorganic reinforcing agent and a fine powder of polyethylene with a mean molecular weight of 1×10^6 to 1×10^9, wherein the fine powder of polyethylene is in a proportion of 3 to 43 parts by weight to 100 parts by weight of the synthetic rubber, and has a particle size of 1 to 74 microns, and the synthetic rubber and fine powder of polyethylene are blended, bridged and shaped and wherein the synthetic rubber, obtained by solution polymerization, is at least one member selected from the group consisting of isobutylene-isoprene rubber, chlorinated isobutylene-isoprene rubber, brominated isobutylene-isoprene rubber, isobutylene-isoprene-divinylbenzene copolymer, ethylene-propylene rubber, ethylene-propylenediene rubber, chlorosulfonated polyethylene, epichlorohydrin rubber, isoprene rubber, styrene-butadiene rubber, isoprene-styrene rubber, ethylene-vinyl acetate copolymer and thermoplastic rubbers of styrene-butadiene or styrene-isoprene.

5,082,876

COMPOSITIONS FOR FOUNDRY MOLDING PROCESSES UTILIZING RECLAIMED SAND

S. Raja Iyer, Naperville; Calvin K. Johnson, Lockport, and Richard C. Cooke, North Riverside, all of Ill., assignors to Borden, Inc., Columbus, Ohio

Continuation of Ser. No. 179,391, Apr. 8, 1988, abandoned. This application Aug. 16, 1990, Ser. No. 568,630

Int. Cl.[5] B22C *1/12*

U.S. Cl. 523—145 **37 Claims**

1. A method for producing a shaped article of a resin-bonded sand, wherein at least 40% of the sand in said article is reclaimed sand, said method comprising combining;

(a) sand of which at least 40% by weight is reclaimed sand,

(b) an aqueous solution of an alkaline phenolic resin that is curable at ambient temperature by a curing agent having ester functionality, and wherein said solution has a solids content in the range of about 33% to about 47% by weight, and,

(c) a curing agent having ester functionality that can cause said resin to cure at ambient temperature; and

shaping, and permitting said shape to cure;

wherein said reclaimed sand contains an alkaline resin binder residue, said residue being left on the surfaces of the reclaimed sand after being previously bonded in a shape by an ester cured alkaline phenolic resin and recovered from said shape in the form of free-flowing sand granules.

5,082,877

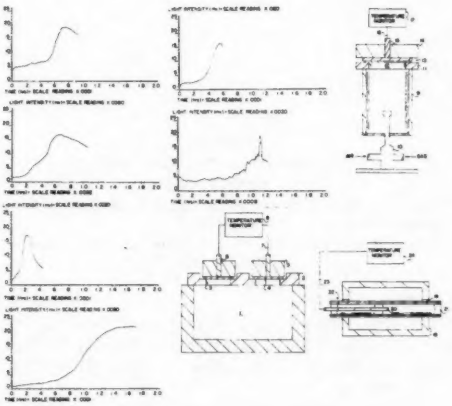
HEAT INSULATING ABLATIVE-TYPE MATERIALS

Vitaly Raevsky, Cherry Hill, N.J.; Lev Y. Zlatkevich, Philadelphia, Pa., and Robert D. Brown, Cinnaminson, N.J., assignors to Ad-Va-Cote Tri-State Inc., Cinnaminson, N.J.

Filed Jun. 30, 1989, Ser. No. 375,095

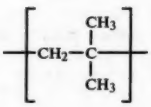
Int. Cl.[5] C09K *21/14*

U.S. Cl. 523—179 **37 Claims**



1. An ablative protective composition comprising:

(a) a polymeric binder component, wherein said binder is a polyisobutylene homopolymer or other higher polymer of polyisobutylene, said polyisobutylene homopolymer or other higher polymer of polyisobutylene comprises a plurality of at least a first repeat unit having the form



wherein said first repeat unit is present in said polyisobutylene homopolymer or said other higher polymer of polyisobutylene in an amount ranging from about 70 to about 100 mole percent, inclusive, said mole percentages being based on the total moles of repeat units present in said polyisobutylene homopolymer or said other higher polymer of polyisobutylene, and

(b) an ablative component, wherein said ablative component is an aluminum sulfate hydrate of the general formula

$$Al_2(SO_4)_3 \cdot nH_2O$$

wherein n is an integer from 14 through 18, inclusive, and wherein said aluminum sulfate hydrate is present in an amount greater than about 50% by weight of said ablative composition.

5,082,878

SHRINK CONTROLLED LOW-TEMPERATURE-CURABLE POLYESTER RESIN COMPOSITIONS

Donald A. Bansleben; Joseph M. Daly, Columbia, both of Md., and Emil Zavadsky, Aigle, Switzerland, assignors to W.R. Grace & Co.-Conn, New York, N.Y.

Continuation of Ser. No. 337,018, Apr. 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 181,942, Apr. 15, 1988, abandoned. This application Dec. 27, 1990, Ser. No. 634,780

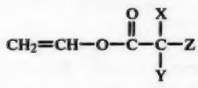
Int. Cl.[5] C08L 67/06

U.S. Cl. 523—203 34 Claims

1. A shrinkage-controllable, polymerizable resin composition comprising:

(a) unsaturated polyester resin and

(b) a shrinkage-reducing effective amount of copolymer comprising (i) a fatty alkyl vinyl ester of the formula:



wherein each of X and Y is independently selected from a methyl and ethyl group, Z is an aliphatic hydrocarbon group, and the sum total carbon atom content of X, Y, and Z is from 7 to 9; and (ii) a short chain vinyl ester of the formula CH_2:CHOOCR' wherein R' is C_1 to C_3 alkyl, said fatty alkyl vinyl ester being present in said copolymer (b) in an amount of at least about 40 mole percent.

5,082,879

METHOD OF TRANSFERRING LATEX PARTICLES FROM AN AQUEOUS TO AN ORGANIC PHASE AND MAKING AN IMPACT RESISTANT ACRYLIC SHEET

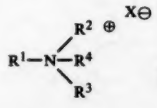
Louis A. Cutter, Pittsburgh, and John J. Godfrey, Murrysville, both of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Division of Ser. No. 171,091, Mar. 21, 1988, abandoned. This application Oct. 10, 1989, Ser. No. 421,310

Int. Cl.[5] C08K 3/00

U.S. Cl. 523—336 4 Claims

1. Method of making an impact-modified polymethylmethacrylate composition comprising forming an aqueous dispersion of impact modifier particles with the aid of an effective amount of an anionic suspending agent, contacting said dispersion with a non-aqueous medium of monomers comprising methyl methacrylate in the presence of a quaternary ammonium surfactant within the general formula:



wherein X is a halide, R^1 and R^2 are independently selected from alkyl groups having from one to four carbon atoms and R^3 and R^4 are alkyl groups having up to 24 carbon atoms, whereby said particles are converted from hydrophilic to hydrophobic separating the water therefrom, and polymerizing said methyl methacrylate to form a hard composition.

5,082,880

SEMICONDUCTOR SEALING COMPOSITION CONTAINING EPOXY RESIN AND POLYMALEIMIDE

Mikio Kitahara; Koichi Machida; Takayuki Kubo; Motoyuki Torikai, and Koutarou Asahina, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Sep. 8, 1989, Ser. No. 404,575

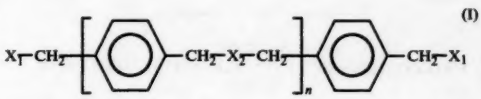
Claims priority, application Japan, Sep. 12, 1988, 63-226481; Dec. 28, 1988, 63-329086; Dec. 28, 1988, 63-329087; Dec. 28, 1988, 63-329088

Int. Cl.[5] C08L 63/00, 79/08

U.S. Cl. 523—466 22 Claims

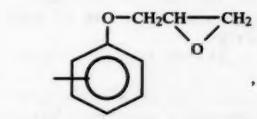
1. A resin composition for sealing semiconductors which comprises components,

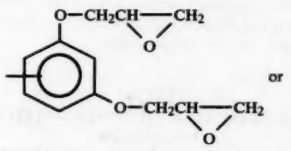
(a) an epoxy resin represented by the following general formula (I):



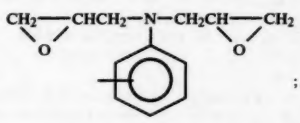
(I)

wherein X_1 represents



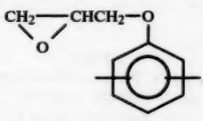


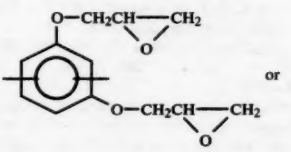
or



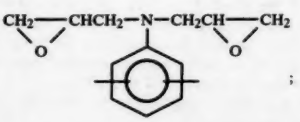
;

X_2 represents





or



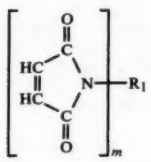
;

and n is an average ranging from 0 to 10;

(b) a hardening agent;

(c) an inorganic filler; and

(d) a polymaleimide represented by the following general formula (III):



(III)

(wherein R_1 represents an m-valent organic group having at least two carbon atoms and m is an integer of not less than 2).

5,082,881

TWO-COMPONENT TYPE ADHESIVE AGENT FOR WOOD

Koichiro Saeki; Koji Nagaoka, and Ichimoto Akasaki, all of Yokohama, Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd, Osaka, Japan

Filed Oct. 24, 1990, Ser. No. 603,302

Claims priority, application Japan, Oct. 27, 1989, 1-278528; Aug. 31, 1990, 2-228318

Int. Cl.[5] C08L *67/00;* C08F *8/00, 220/02;* C08G *59/16*

U.S. Cl. 523—511 13 Claims

1. A two-component type adhesive agent, comprising a polyvalentepoxy compound and an aqueous liquid of an amino group-containing polymer obtained by modifying a carboxyl group-containing polymer with an alkylene imine and possessed of an activated hydrogen atom.

5,082,882

USE OF STARCH IN THE PREPARATION OF POLYMERS

Ted M. Pettijohn, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 30, 1989, Ser. No. 443,545

Int. Cl.[5] C08L *3/00, 3/02*

U.S. Cl. 524—47 23 Claims

1. A process for preparing a polymer-starch composite containing at least about 80 weight percent polymer comprising polymerizing at least one olefin under suitable polymerization conditions in the presence of particles of starch, an organometallic co-catalyst, and a particulate olefin polymerization catalyst comprising magnesium and a transition metal.

5,082,883

REDUCED VISCOSITY POLYBLENDS OF POLYESTER AND EPOXY RESINS

Peter S. Alexandrovich, Rochester; John E. Derimiggio, Fairport, and John C. Wilson, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 12, 1990, Ser. No. 491,759

Int. Cl.[5] C08L *75/04*

U.S. Cl. 524—109 14 Claims

1. A polyblend for a toner powder comprising:

(a) a polyester that is the reaction product of at least one carboxylic acid monomer and at least one alcohol wherein most of the alcohol and the carboxylic acid monomers have a functionality of less than three, the polyester having a glass transition temperature in the range of about 50° to about 100° C., and a number average molecular weight in the range of about 5000 to 20,000;

(b) a low molecular weight epoxy polymer selected from the group consisting of:

(1) epoxy resins having an epoxide equivalent weight in the range of about 188 to about 3800; and

(2) epoxy resins having such epoxides which are additionally at least partially esterified by at least one monocarboxylic acid; and mixtures thereof.

5,082,884

SILICON-CONTAINING POLYMERS COMPOSED MAINLY OF ACRYLATES AND/OR METHACRYLATES

Ulrich Filges, Limburgerhof; Oral Aydin, Mannheim; Andreas Otterbach, Frankenthal, and Gerhard Auchter, Bad Duerkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 22, 1990, Ser. No. 482,987

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1989, 3907990

Int. Cl.[5] C08K *3/34*

U.S. Cl. 524—188 10 Claims

1. A silicon-containing polymer consisting of

(a) from 65 to 99.95 parts by weight of a member selected from the group consisting of acrylates, methacrylates and mixtures thereof of an aliphatic alcohol of 1 to 12 carbon atoms (monomers A),

(b) from 0 to 30 parts by weight of one or more ethylenically unsaturated monomers capable of undergoing free radical copolymerization (monomers B),

(c) from 0.05 to 10 parts by weight of one or more anhydrides of an α,β-monoethylenically unsaturated dicarboxylic acid of 4 to 10 carbon atoms (monomers C) or from 0.1 to 10 parts by weight of one or more monomers containing one or more isocyanate groups and capable of undergoing free radical copolymerization (monomers D) and

(d) effective amounts of one or more silanes of the general formula I

$$NH_2\text{-}R^1\text{—}Si(R^2)_{3-m}(R^3)_m \qquad (I)$$

where m is 0, 1 or 2, R^1 is a hydrocarbon chain of not more than 10 carbon atoms which may be interrupted by oxygen or nitrogen, the radicals R^2 are identical or different hydrolyzable groups and the radicals R^3 are identical or different C_1–C_5-alkyl groups.

5,082,885

STABILIZED ETHYLENE-CARBON MONOXIDE COPOLYMER COMPOSITIONS

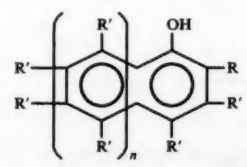
Robert Q. Kluttz, Houston, Tex., and Johannes L. M. Syrier, Badhuisweg, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 476,847, Feb. 8, 1990, which is a continuation-in-part of Ser. No. 382,512, Jul. 20, 1989, abandoned. This application Aug. 29, 1990, Ser. No. 574,029

Int. Cl.[5] C08K *5/13*

U.S. Cl. 524—347 33 Claims

1. A stabilized composition comprising a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon and incorporated therein a stabilizing quantity of a phenolic compound of the formula



wherein R is hydrogen, alkyl of up to 18 carbon atoms or 4-alkoxybenzyl, R′ independently is hydrogen, hydroxy, lower alkoxy, alkyl of up to 18 carbon atoms, phenyl, halophenyl or dialkylhydroxyphenyl and n is 0 or 1, with the proviso that at

least one R' is hydroxy, alkoxy or dialkylhydroxyphenyl, or R is alkoxybenzyl.

5,082,886

LOW COMPRESSION SET, OIL AND FUEL RESISTANT, LIQUID INJECTION MOLDABLE, SILICONE RUBBER

Edward M. Jeram, Burnt Hills; Brian J. Ward, Valley Falls, and Donald A. Martin, Clifton Park, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Aug. 28, 1989, Ser. No. 399,635
Int. Cl.[5] C08K *3/10*
U.S. Cl. 524—403 **14 Claims**

1. A liquid, injection moldable silicone composition comprising:

(A) 100 parts of a first component comprising:

(1) a blend of vinyl-containing liquid polysiloxanes comprising:

(a) a high viscosity vinyl-containing organopolysiloxane having a viscosity of from 5000 to 1,000,000 centipoise at 25° C.; and

(b) a low viscosity vinyl-containing organopolysiloxane having a viscosity of from 50 to 5000 centipoise at 25° C.;

(2) filler; and

(3) a platinum catalyst;

(B) from 1 to 100 parts, based on 100 parts of (A), of a hydrogen silicone composition selected from the class consisting of hydrogen containing silanes and hydrogen containing polysiloxanes;

(C) magnesium oxide;

(E) cerium hydroxide or tetramethyldivinyldisilazane; and

(D) (1) from 1 to 50 parts by weight of an organopolysiloxane resinous copolymer comprising $R_3^7SiO_{0.5}$ monofunctional units and SiO_2 tetrafunctional units, where the ratio of monofunctional units to tetrafunctional units being from 0.5 to 1 to 1 to 1; or (2) from 20 to 50 parts by weight of an organopolysiloxane resinous copolymer comprising $R_3^7SiO_{0.5}$ monofunctional units, SiO_2 tetrafunctional units, and R_2^7SiO difunctional units, where the ratio of monofunctional units to tetrafunctional units being from 0.5 to 1 to 1 to 1 and the difunctional units are present in an amount equal to about 1 to 10 mole percent based on the total number of moles of siloxy units in the copolymer; wherein R^7 is a member selected from a class of vinyl radicals and monovalent hydrocarbon radicals free of aliphatic unsaturation and wherein the resinous copolymer contains from about 2.5 to 10 mole percent of vinyl groups.

5,082,887

AGGREGATED COMPOSITE MINERAL PIGMENTS

Alan J. Brown, Milledgeville; Dickey S. Shurling, Jr., Sandersville, and Jenny S. Carswell, Milledgeville, all of Ga., assignors to ECC American Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 459,093, Dec. 29, 1989. This application Nov. 7, 1990, Ser. No. 609,790
The portion of the term of this patent subsequent to Nov. 26, 2008, has been disclaimed.
Int. Cl.[5] C08J *3/14*
U.S. Cl. 524—413 **14 Claims**

1. A process for forming chemically aggregated composite bulking pigments for use in paper filling and coating formulations, which comprises:

a) forming an aqueous slurry at 10 to 30% solids, of a feed material comprising mineral particles selected from one or more members of the group consisting of kaolin, calcium carbonate, titanium dioxide, gypsum, and mica;

b) adding a high molecular weight carboxyl-containing polymer or copolymer to said slurry to flocculate the said mineral particles;

c) adding to the flocced slurry an excess of calcium ion to precipitate the calcium salt of the said carboxyl-containing polymer in situ on the mineral flocs, and thereby form aggregates of mineral particles interconnected with said calcium salt and having a bulk, porous, floc structure;

d) reacting the remaining calcium ion with gaseous carbon dioxide added to said slurry to precipitate calcium carbonate onto the said polymeric carboxyl calcium salt, to thereby form additional light scattering voids and strengthen the connections among the flocced particles of said mineral; and

e) recovering and drying the resultant composite aggregates as product.

5,082,888

POLYPROPYLENE RESIN COMPOSITION HAVING HIGH DIELECTRIC STRENGTH

Masaru Abe, Osaka; Yoichi Kawai, and Minoru Hoshino, both of Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Oct. 3, 1989, Ser. No. 416,355
Claims priority, application Japan, Oct. 7, 1988, 65-252022
Int. Cl.[5] C08K *3/34*
U.S. Cl. 524—449 **11 Claims**

1. A polypropylene resin composition comprising (a) from about 50% to about 80% by weight of a crystalline ethylene-propylene block copolymer having a melt flow index at 230° C. of not less than about 3 g/10min and an ethylene content of not less than about 4% by weight; (b) from about 15% to about 30% by weight of mica having an average particle size of from about 15 to about 50 microns and the following particle size distribution:

≧30 microns from about 10% to about 80% by weight

≧20 microns from about 30% to about 95% by weight

≧10 microns not less than about 60% by weight

≧5 microns not less than about 80% by weight and (c) from about 5% to about 20% by weight of talc having an average particle size of from about 15 to about 40 microns and the following particle size distribution:

≧30 microns from about 20% to about 65% by weight

≧20 microns from about 40% to about 80% by weight

≧10 microns from about 65% to about 95% by weight

≧5 microns not less than about 85% by weight.

5,082,889

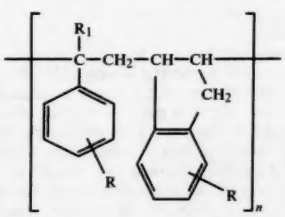
REINFORCED POLYPROPYLENE COMPOSITION

Junji Koizumi, Nagoya, and Yoshito Yazaki, Inazawa, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Mar. 22, 1990, Ser. No. 497,030
Claims priority, application Japan, Apr. 19, 1989, 1-99231
Int. Cl.[5] C08K *3/34*
U.S. Cl. 524—451 **9 Claims**

1. A reinforced polypropylene composition comprising:

from 50 to 80% by weight a resin component comprising from 35 to 90 parts by weight a crystalline polypropylene (A) of 5 to 50, from 5 to 60 parts by weight a polyethylene resin (B), and from 5 to 30 parts by weight an aromatic hydrocarbon resin (C), which is represented by the following chemical structure wherein R and R1 designate H or CH_3, and n designates the degree of polymerization:



said aromatic hydrocarbon resin having a softening tempera-

ture ranging from 80° to 170° C. measured by the ball and ring method,

the sum of (A), (B), and (C) being 100 parts by weight;

from 15 to 45% by weight talc (D); and

from 1 to 40% by weight glass fiber (E);

with the sum of said talc and said glass fiber being not more than 50% by weight of the total sum of (A)+(B)+(C)+(D)+(E).

5,082,890

FILLED THERMOPLASTIC MOLDING COMPOSITIONS

Chai-Jing Chou, Missouri City, Tex.; Gregory M. Smith, Danbury, Conn., and Hani Farah, Sugarland, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 21, 1990, Ser. No. 570,483

Int. Cl.[5] C08K *3/34*

U.S. Cl. 524—451 15 Claims

1. A composition of matter comprising, in admixture, (a) about 10 parts to about 93 parts by weight aromatic polycarbonate, (b) about 5 parts to about 90 parts by weight polyester, (c) about 1 part to about 15 parts by weight olefin/carbon monoxide copolymer, (d) about 1 part to about 20 parts by weight grafted core-shell elastomer, and (e) about 1 part to about 40 parts by weight talc concentrate in the form of a talc filler in a polyolefin carrier, wherein said talc filler is at least fifty percent by weight of said concentrate.

5,082,891

CURABLE RESIN COMPOSITION CONTAINING DISPERSED PARTICLES OF A CURED SILICONE RUBBER

Yoshitsugu Morita; Noriyasu Yokoyama, and Keiji Yoshida, all of Chiba, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 317,368, Feb. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 234,242, Aug. 19, 1988, abandoned. This application Dec. 13, 1989, Ser. No. 450,692

Claims priority, application Japan, Feb. 29, 1988, 63-47215

Int. Cl.[5] C08K *5/01*

U.S. Cl. 524—481 4 Claims

1. In an improved curable resin composition comprising

(I) 100 parts by weight of a curable resin selected from the group consisting of phenolic resins, formaldehyde resins, xylene resins, furan resins, urea resins, imide resins, melamine resins, alkyd resins, aniline resins, sulfonamide resins, silicone resins, epoxy resins, and copolymers obtained by reacting two or more of these resins, and

(II) from 0.1 to 100 parts by weight of uniformly dispersed, finely divided particles of a cured silicone rubber exhibiting a particle diameter not exceeding 1 millimeter, where said particles are obtained by curing an organosiloxane composition comprising

(A) 100 parts by weight of an organopolysiloxane having at least two silicon-bonded lower alkenyl groups in each molecule,

(B) from 0.3 to 100 parts by weight of an organohydrogenpolysiloxane having at least two silicon-bonded hydrogen atoms in each molecule, and

(C) an amount of a platinum-containing catalyst sufficient to promote curing of said silicone rubber,

the improvement comprising the presence in the curable organosiloxane composition of either

(1) from 0.1 to 50 parts by weight of (D) an aliphatically unsaturated epoxide compound or a reaction product of from 0.1 to 50 parts by weight of said epoxide compound with a quantity of said organohydrogenpolysiloxane in excess of that required to react with said organopolysiloxane; and from 0.1 to 100 parts by weight of (E) an aromatic hydrocarbon containing at least one aliphatically unsaturated group per molecule or a reaction product of said aromatic hydrocarbon with a quantity of said organohydrogenpolysiloxane in excess of that required to react with said organopolysiloxane, or

(2) a reaction product of from 0.1 to 50 parts by weight of said epoxide compound and from 0.1 to 100 parts by weight of said aromatic hydrocarbon with a quantity of said organohydrogenpolysiloxane in excess of that required to react with said organopolysiloxane.

5,082,892

NOVEL RESIN COMPOSITION AND CHASSIS FOR ELECTRONIC INSTRUMENTS SHAPED THEREFROM

Yoshiaki Miura, Sodegaura; Masami Mihara, and Hidezo Hosomi, both of Ichihara, all of Japan, assignors to Idemitsu Petrochemical Company, Ltd., Tokyo, Japan

Filed Feb. 26, 1990, Ser. No. 485,222

Claims priority, application Japan, Mar. 2, 1989, 1-48579; Mar. 23, 1989, 1-69308

Int. Cl.[5] C08L *39/04, 37/00*

U.S. Cl. 524—516 7 Claims

1. A synthetic resin composition which consists essentially of, as a blend:

(A) 100 parts by weight of a copolymeric resin of styrene and maleic anhydride or maleimide, of which the molar fraction of the moiety of maleic anhydride or maleimide is in the range from 3 to 20%;

(B) from 1 to 30 parts by weight of an elastomeric copolymer which is a copolymer of styrene, methyl methacrylate and butadiene containing from 5 to 50 weight percent of copolymerized styrene, and

(C) from 5 to 80 parts by weight of glass fibers.

5,082,893

POLYOLEFIN RESIN COMPOSITIONS AND APPLICATIONS THEREOF

Tadashi Asanuma; Kazuhiko Yamamoto; Mitsuru Ito, and Kaoru Kawanishi, all of Takaishi, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Sep. 11, 1989, Ser. No. 405,300

Claims priority, application Japan, Sep. 16, 1988, 63-229844; Dec. 12, 1988, 63-311873; Dec. 12, 1988, 63-311874; Dec. 21, 1988, 63-320591; Jan. 19, 1989, 1-8498; Jan. 19, 1989, 1-8499; Feb. 16, 1989, 1-34994; Mar. 6, 1989, 1-52055; May 19, 1989, 1-24265; Jun. 29, 1989, 1-165401

Int. Cl.[5] C08L *41/00*

U.S. Cl. 524—547 21 Claims

1. A polyolefin resin composition comprising (i) a copolymer which is prepared by copolymerizing an alkenylsilane represented by the formula:

$$H_2C{=}CH{-}(CH_2)_n SiH_pR_{3-p}$$

wherein n is from 0 to 12, p is from 1 to 3, and R represents a $C_{1\text{-}12}$ hydrocarbon residual group and an olefin in the presence of a catalyst comprising a transition metal compound and an organometal compound, (ii) a polyolefin, and (iii) an inorganic filler.

5,082,894

STORAGE STABLE ONE-PART ORGANOSILOXANE COMPOSITIONS

Bernard VanWert, Midland, Mich., and Dawn M. Houghtaling, Randolph, N.J., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 19, 1990, Ser. No. 495,823

Int. Cl.[5] C08K *5/54*

U.S. Cl. 524—730 4 Claims

1. In an improved one-part liquid organosiloxane composition curable by a platinum-catalyzed hydrosilylation reaction, the composition comprising

A. at least one liquid polydiorganosiloxane containing an average of at least two alkenyl radicals per molecule.

B. as the curing agent, an organohydrogensiloxane containing an average of at least three silicon-bonded hydrogen atoms per molecule in an amount sufficient to cure said composition to an elastomer.

C. an amount of a platinum-containing hydrosilylation catalyst sufficient to promote curing of said composition at a temperature of at least 80 degrees C.,

D. as the catalyst inhibitor, an amount of an acetylenic alcohol sufficient to suppress the activity of said catalyst at temperatures below about 40 degrees C., and

E. as an adhesion promoter, an amount of at least one functionally substituted silane sufficient to achieve cohesive bonding between an material prepared by curing said composition and an inorganic substrate,

the improvement consisting essentially of the presence in said composition of (1) an acetylenic alcohol containing at least 8 carbon atoms in an amount that imparts long term storage stability to the curable composition yet does not inhibit curing of said composition at temperatures below about 150 degrees, and (2) as said adhesion promoter, a mixture consisting essentially of (a) a polysiloxane containing at least one silicon-bonded vinyl radical and at least one silicon-bonded hydroxyl radical per molecule, and (b) an epoxy-substituted alkoxysilane, where the concentration of said adhesion promoter is from 0.5 to 5 percent by weight, based on the weight of said polydiorganosiloxane, and the weight ratio of said alkoxysilane to said polysiloxane is from 0.3 to 3 parts by weight of alkoxysilane per part of polysiloxane.

5,082,895

HIGH SOLIDS, LARGE PARTICLE SIZE LATEX COMPOSITIONS

Doris Wolff, 414 Sherman, Park Forest, Ill. 60466, and Clois E. Powell, 450 Lowell Dr., Highland Heights, Ohio 44143

Continuation of Ser. No. 292,595, Dec. 30, 1988, abandoned. This application Jun. 18, 1990, Ser. No. 539,295

Int. Cl.[5] C08L *33/08*

U.S. Cl. 524—820 **6 Claims**

1. A corrosion resistant latex composition having at least 50% non-volatile materials, a JLDC Average Particle Number Diameter of at least 0.20 micron, a JLDC Average Particle Volume Diameter of at least 0.20 micron, a Tg onset of between about −10° C. and about 50° C., and at 55% non-volatile materials and 25° C. said latex having a viscosity of less than 150 centipoise, comprising an emulsion of water with the reaction product of from about 35–50% of 2-ethylhexyl acrylate, from about 30–45% of styrene, from about 5–15% of at least one other acrylate monomer, from about 2–10% of acrylonitrile and from about 0.5–6% of monomeric acid, all percentages by weight based on the amount of total monomer present.

5,082,896

POLYMERIC MATERIALS USEFUL FOR SIZING SYNTHETIC YARNS TO BE USED IN WATER JET WEAVING

Marie S. Chan, Forest City, N.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Jan. 17, 1989, Ser. No. 297,725

Int. Cl.[5] C08L *33/06*

U.S. Cl. 524—823 **17 Claims**

1. A sizing composition which comprises an aqueous dispersion of from about 5 to about 40 parts by weight of a polymer made from the following monomer units:

a.) from about 23 to about 32 parts by weight butyl acrylate;

b.) from about 16 to about 22 parts by weight of a lower alkyl methacrylate;

c.) from about 28 to about 40 parts by weight of a monomer selected from vinyl acetate and styrene; and

d.) from about 14 to about 20 parts by weight of an acidic monomer selected from acrylic acid and methacrylic acid; said polymer being further characterized as having an intrinsic viscosity of from about 0.16 to about 0.30 deciliter per gram as measured by a Cannon-Fenske Kinematic viscometer, said composition having been adjusted to a pH of from about 6 to about 8 and a bulk viscosity of less than about 2,000 centipoise as measured by a Brookfield LTV viscometer.

5,082,897

POLYMER BLENDS OF POLYCARBONATE, PCTG AND ABS

Kishore Udipi, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 15, 1989, Ser. No. 452,926

Int. Cl.[5] C08L *69/00, 67/02, 55/02*

U.S. Cl. 525—67 **8 Claims**

1. A polymer blend useful as a thermoplastic injection molding resin consisting essentially of:

(A) at least 10 percent by weight PC which is an aromatic polycarbonate derived from the reaction of bisphenol-A and phosgene,

(B) at least 10 percent by weight of PCTG which is an amorphous polyester of terephthalic acid and a mixture of predominately 1,4-cyclohexanedimethanol, and a lesser amount of ethylene glycol and

(C) at least 10 percent by weight ABS which is a polymer of butadiene or mixtures of butadiene and styrene or acrylonitrile grafted with styrene and acrylonitrile monomers;

wherein said blend has the following properties:

(1) melt flow into a mold (Spiral Flow) as measured by the procedure for Spiral Flow of at least 25 centimeters,

(2) heat distortion temperature underload (HDTUL) as measured ASTM D648 of at least 75° C., and

(3) thick section notched Izod impact resistance (IZOD-¼) as measured by ASTM 256-56 on a 6.4 mm thick notched specimen at 23° C. of at least 140 Joules/meter.

5,082,898

POLYPHENYLENE ETHER RESIN COMPOSITION

Hiroyuki Minematsu, and Yasuo Nagai, both of Niihama, Japan, assignors to Sumitomo Naugatuck Co., Ltd., Osaka, Japan

Filed Sep. 22, 1988, Ser. No. 247,615

Int. Cl.[5] C08L *71/12*

U.S. Cl. 525—68 **4 Claims**

1. A resin composition comprising:

(A) 10 to 90 parts by weight of a polyphenylene ether resin,

(B) 8 to 88 parts by weight of a resin comprising (B-1) an unsaturated nitrile compound (B-2) an aromatic vinyl compound, (B-3) a diene rubber and optionally (B-4) a vinyl compound copolymerizable therewith,

(C) 1 to 30 parts by weight of a first graft copolymer selected from the group consisting of

(C-I) a graft copolymer which is obtainable by polymerizing 95 to 5 parts by weight of a monomer mixture comprising 100 to 70% by weight of (c-v) an aromatic vinyl compound and 0 to 30% by weight of (c-vi) at least one other compound copolymerizable therewith in the presence of 5 to 95 parts by weight of a polymer (C-1) comprising 10 to 40% by weight of (c-i) an unsaturated nitrile compound, 60 to 90% by weight of (c-iii) at an aromatic vinyl compound and 0 to 30% by weight of (c-iii) at least one other vinyl compound copolymerizable therewith, and having (c-iv) a vinyl group at least at one of molecular ends, and

(C-II) a graft copolymer which is obtainable by polymerizing 4 to 98% by weight of at least one vinyl compound (c-vii) in the presence of 1 too 95% by weight of a polymer (C-1) comprising 10 to 40% by weight of c-i) an unsaturated nitrile compound, 60 to 90% by weight of (c-ii) an aromatic vinyl compound and 0 to 30% by weight of (c-iii) at least one other vinyl compound copolymerizable therewith, and having (c-iv) a vinyl group at least at one of molecular ends, and 1 to 95% by weight of (C-2) a polymer comprising 50 to 100% by

weight of the aromatic vinyl compound (c-v) and 0 to 50% by weight of at least one another compound copolymerizable therewith (c-vi) except unsaturated nitrile compounds, and having (c-iv) a vinyl group at least at one of molecular ends,

(E) 1 to 30 parts by weight of a second graft copolymer which is obtainable by polymerizing 95 to 5 parts by weight of a monomer mixture comprising 10 to 40% by weight of (e-iv) an unsaturated nitrile compound, 90 to 60% by weight of (e-v) an aromatic vinyl compound and 0 to 30% by weight of (e-vi) at least one other vinyl compound copolymerizable therewith in the presence of 5 to 95 parts by weight of a polymer (E-1) which comprises 50 to 100% by weight of (e-i) an aromatic vinyl compound and 0 to 50% by weight of (e-ii) at least one other vinyl compound copolymerizable therewith except unsaturated nitrile compounds, and has (e-iii) a vinyl group at least at one of molecular ends, when (C-I) is present.

5,082,899

MALEIC ANHYDRIDE-GRAFTED POLYOLEFIN FIBERS

Lawrence H. Sawyer, Sewell, N.J.; Marvin A. White, Clute, and George W. Knight, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 2, 1988, Ser. No. 266,455

Int. Cl.[5] C08G *63/45*

U.S. Cl. 525—74 **42 Claims**

1. A fiber, consisting essentially of:

a biconstituent blend of ungrafted linear low density polyethylene and grafted high density polyethylene or linear low density polyethylene wherein the high density polyethylene or linear low density polyethylene has been grafted with maleic acid or anhydride to obtain succinic acid or anhydride groups along the polymer chain, and wherein the blend has been melt-drawn to form a fine denier strand having a melting point range of at least 7.5° C.

5,082,900

OPACIFIED MOLDED PRODUCT

Takashi Kuroda; Kazuhiro Yamada; Tadao Ishibashi; Suetou Hayashida; Kyoichiro Kimura, and Masaru Sameshima, all of Chiba, Japan, assignors to Chisso Corporation and Maruzen Petrochemical Co., Ltd., both of, Japan

Filed Mar. 27, 1990, Ser. No. 499,630

Claims priority, application Japan, Mar. 29, 1989, 1-74919; Mar. 31, 1989, 1-78293

Int. Cl.[5] C08L *23/12, 45/00, 25/10*; C08J *5/18*

U.S. Cl. 525—211 **12 Claims**

1. An opacified, stretched molded product having a composition comprising 3 to 40 parts by weight of at least one of a cyclopentadiene petroleum resin and a hydrogenated cyclopentadiene petroleum resin having a softening point of 160° C. or higher as measured according to the ring and ball method, and 100 parts by weight of a crystalline polypropylene, said molded product being a product stretched in at least one direction, and having a total light transmittance of 50% or less and a density of 0.89 g/cm^3 or less.

5,082,901

TIRE WITH TREAD

Tom D. Linster, Gilsdorf, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 24, 1990, Ser. No. 587,128

Int. Cl.[5] C08L *7/00, 9/00, 9/06*

U.S. Cl. 525—237 **2 Claims**

1. A pneumatic rubber tire having a rubber tread where said tread rubber is comprised of, based on 100 parts by weight of the tread rubber, (1) about 40 to about 60 parts by weight styrene/butadiene copolymer rubber having a Tg in a range of about −25° C. to about −50° C. and a styrene content of about 30 to about 35 percent; (2) about 20 to about 30 parts by weight cis 1,4-polyisoprene rubber having a Tg in a range of about −65° C. to about −85° C.; and (3) about 20 to about 30 parts by weight cis 1,4-polybutadiene rubber having a Tg in a range of about −75° C. to about −105° C.; wherein the Tg of the said styrene/butadiene copolymer rubber is at least 30° C. higher than the Tg's of the said cis 1,4-polyisoprene rubber and cis 1,4-polybutadiene.

5,082,902

METHOD FOR REDUCING CYCLE TIME AND IMPROVING MOLDED PART IMPACT ENERGY AND ESCR OF LINEAR HIGH DENSITY POLYETHYLENE USING A BLEND OF TWO LINEAR POLYETHYLENES OF DIFFERENT DENSITIES

Judithann Gurevitch, Clinton; Bruce S. Yarmoska, Somerville, both of N.J., and Harvey R. Gunter, Pearland, Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 222,990, Jul. 22, 1988, abandoned, which is a continuation-in-part of Ser. No. 947,215, Dec. 29, 1986, abandoned. This application Dec. 19, 1990, Ser. No. 630,125

Int. Cl.[5] C08L *23/06, 23/08, 23/20*

U.S. Cl. 525—240 **2 Claims**

1. A method for forming articles comprising:

(1) preparing a polymer blend having a melt index (MI) of 1 to 200 g/10 minutes, melt flow ratio (MFR) of less than 35 and density greater than 0.935 g/cm^3 comprising:

(a) 5 to 50 wt % of a first polymer, having a density of from 0.85 to 0.95 g/cm^3, an MI of 1 to 200 g/10 minutes and an MRF of less than 35, said first polymer comprising a linear copolymer of ethylene and a C_3 and C_{10} alpha-olefin;

(b) 50 to 95 wt % of a second polymer blended with said first polymer, having a density which is 0.015 to 0.15 g/cm^3 greater than the density of said first polymer, an MI differing by no more than 50% from the MI of said first polymer, and an MFR of less than 35, said second polymer comprising a linear ethylene homopolymer or a copolymer of ethylene and a C_3 to C_{10} alpha-olefin;

(2) subjecting said polymer blend to injection or rotational molding.

5,082,903

ACRYLIC ELASTOMER AND ITS VULCANIZABLE COMPOSITION

Kazuma Yokoi, Takahagi, Japan, assignor to Nippon Miktron Limited, Tokyo, Japan

Filed Jun. 26, 1990, Ser. No. 543,589

Claims priority, application Japan, Jun. 6, 1989, 1-174945; Jun. 14, 1989, 1-182289

Int. Cl.[5] C08F *8/30*

U.S. Cl. 525—340 **7 Claims**

1. A vulcanizable composition which comprises a copolymer of

(a) at least one acrylate selected from the group consisting of

(1) an alkyl acrylate having an alkyl group having 1 to 8 carbon atoms, and

(2) an alkoxyalkyl acrylate having an alkoxyalkyl group having 2 to 8 carbon atoms, and

(b) an epoxy group-containing vinyl monomer, and

(c) an α,β-unsaturated carboxylic acid aryl ester, together with both

(i) a cyanuric acid cross-linking agent, and

(ii) at least one cross-linking agent selected from the group consisting of

(A) a quaternary ammonium salt, and

(B) a phosphonium salt.

5,082,904

SURFACE-MODIFIED POLYACRYLONITRILE SUBSTRATES

Laurence W. Chang, Orange; Larry S. Anderson, Norwalk, and David A. Ley, New Canaan, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 13, 1990, Ser. No. 507,586
Int. Cl.[5] C08F 8/22
U.S. Cl. 525—355 12 Claims

1. A process for the preparation of surface-modified substrates comprising a core of polyacrylonitrile or a copolymer of acrylonitrile said core having N-haloamide groups, and optionally nitrile and amide groups, evenly distributed over the surface thereof, said process comprising:

a) contacting a substrate comprising polyacrylonitrile or a copolymer of acrylonitrile and at least one comonomer with an alkaline catalyst, and a peroxide, and optionally a reducing agent under reaction conditions and for a time sufficient to convert at least a portion of the nitrile groups distributed on the surface of the substrate to amide groups;

b) contacting said substrate with a halogenating reagent under reaction conditions and for a time sufficient to convert at least a portion of amide groups to N-haloamide groups; and

c) recovering the surface-modified substrate.

5,082,905

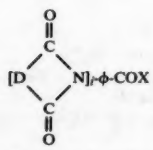
BLENDED HETEROCYCLES

Hyman R. Lubowitz, Rolling Hills Estates, Calif., and Clyde H. Sheppard, Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 544,273, Jun. 26, 1990, which is a division of Ser. No. 116,592, Nov. 3, 1987, Pat. No. 4,965,336, which is a continuation-in-part of Ser. No. 816,490, Jan. 6, 1986, abandoned, which is a continuation-in-part of Ser. No. 651,826, Sep. 18, 1984, abandoned. This application May 6, 1991, Ser. No. 696,492
Int. Cl.[5] C08F 283/00; C08G 69/48
U.S. Cl. 525—420 9 Claims

1. A blend comprising a crosslinking oligomer and a comparable noncrosslinking polymer, the crosslinking oligomer formed by reacting:

(a) 2 moles of a crosslinking phenylimide acid halide of the general formula:



wherein

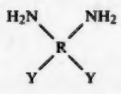
D=is an unsaturated hydrocarbon radical;

i=1 or 2; and

ϕ=phenyl

(b) n moles of a diacid halide; and

(c) (n+1) moles of at least one four-functional compound of the general formula:



wherein R is a hydrocarbon radical, Y is selected from the group consisting of —OH, —SH and —NH_2, each Y group is attached to a carbon atom adjacent to a carbon atom to which the —NH_2 group is attached, and n is selected so that the oligomer has an average formula weight of between about 500 to about 40,000.

5,082,906

CATALYST FOR THE SYNTHESIS OF CRYSTALLINE 3,4-POLYISOPRENE

Wen-Liang Hsu, Copley, and Adel F. Halasa, Bath, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 24, 1990, Ser. No. 602,546
Int. Cl.[5] C08F 4/70
U.S. Cl. 526—93 19 Claims

1. A process for the synthesis of 3,4-polyisoprene which comprises polymerizing isoprene monomer in an organic solvent at a temperature which is within the range of about −10° C. to about 100° C. in the presence of a catalyst system which is comprised of (a) an organoiron compound, (b) an organoaluminum compound, (c) a chelating aromatic amine, and (d) a protonic compound selected from the group consisting of water, alcohols and carboxylic acids; wherein the molar ratio of the chelating amine to the organoiron compound is within the range of about 0.1:1 to about 1:1, wherein the molar ratio of the organoaluminum compound to the organoiron compound is within the range of about 5:1 to about 200:1, and wherein the molar ratio of the protonic compound to the organoaluminum compound is within the range of about 0.001:1 to about 0.2:1.

5,082,907

OLEFIN POLYMERIZATION CATALYST

Robert C. Job, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 18, 1990, Ser. No. 599,550
Int. Cl.[5] C08F 4/653
U.S. Cl. 526—119 3 Claims

1. A process for producing polyolefin by polymerizing lower α-olefin in the presence of an olefin polymerization catalyst, the improvement of employing as the catalyst an olefin polymerization catalyst produced by contacting:

(A) a solid catalyst component obtained by contacting, at a temperature in the range from about 20° C. to about 180° C., a tetravalent, titanium halide, a halohydrocarbon, an electron donor and a magnesium containing, titanium-containing complex alkoxide compound obtained by contacting magnesium alkoxide wherein each alkoxide has up to 4 carbon atoms inclusive, titanium alkoxide wherein each alkoxide has up to 4 carbon atoms inclusive, and trialkylborate ester wherein each alkyl has up to 4 carbon atoms inclusive, in alkanol and removing alkanol from the resulting complex alkoxide compound alcoholate;

(B) an organoaluminum cocatalyst and;

(C) a selectivity control agent.

5,082,908

ETHYLENE-α-OLEFIN COPOLYMER AND PROCESS FOR PRODUCING THE SAME

Akio Imai; Kiyoyuki Sugimori; Keisaku Yamamoto, and Minoru Takane, all of Chiba, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Jun. 8, 1989, Ser. No. 363,654
Claims priority, application Japan, Jun. 8, 1988, 63-142522; Jun. 1, 1989, 1-141854
Int. Cl.[5] C08F 4/609, 210/16
U.S. Cl. 526—143 5 Claims

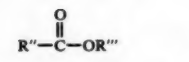
1. A process for producing an ethylene-α-olefin copolymer having an ethylene/α-olefin molar ratio of from 92/8 to 96/4 and having a number average molecular weight of from 35,000 to 80,000 and a weight average molecular weight/number average molecular weight ratio of from 1.8/1 to 2.6/1 as determined by gel permeation chromatography, and showing a single endothermic peak as determined by means of a differential scanning calorimeter, said endothermic peak being in the range of from 80° C. to 105° C., which comprises copolymerizing ethylene and an α-olefin having from 4 to 8 carbon atoms at an ethylene/α- olefin molar ratio of from 40/60 to 58/42 at

a temperature of from 40 to 65° C. using a catalyst system composed of a vandaium compound represented by formula:

$$VO(OR)_nX_{3-n}$$

wherein R represents a hydrocarbon group; X represents a halogen atom; and n is a number of from 0 to 1, an organoaluminum compound represented by formula:

R'_mAlX_{3-m} wherein R' represents a hydrocarbon group; X represents a halogen atom; and m represents a number of from 1 to 2, and a halogenated ester compound represented by formula:



wherein R'' represents an organic group derived from a hydrocarbon group having from 1 to 20 carbon atoms by substituting a part or all of the hydrogen atoms thereof with a halogen atom; and R''' represents a hydrocarbon group having from 1 to 20 carbon atoms, at an organoaluminum compound-/vanadium compound molar ratio of from 2.5/1 to 30/1 and at a halogenated ester compound/vanadium compound molar ratio of 1.5/1 or more, in a system in which a polymer insoluble in a hydrocarbon solvent and a polymer soluble in a hydrocarbon solvent coexist, said hydrocarbon solvent-insoluble polymer is 95% by weight or more based n the total polymer at 40° C. and 100% by weight based on the total polymer at 70° C.

5,082,909

PURE TUNGSTEN OXYPHENOLATE COMPLEXES AS DCPD POLYMERIZATION CATALYSTS

Andrew Bell, West Grove, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Filed Oct. 12, 1990, Ser. No. 596,265
Int. Cl.[5] C08F *4/78*
U.S. Cl. 526—169 **30 Claims**

1. A polymerization feed composition comprising:
(a) a metathesis polymerizable cycloolefin;
(b) a metathesis polymerization catalyst represented by the formula $WOCl_{4-x}(OAr)_x$; wherein x is 1, 2 or 3, wherein OAr represents a mono-, di-, tri-, tetra- or penta-substituted phenoxy group, and
(c) a catalyst activator.

5,082,910

POLYMERIZATION PROCESS USING TERTIARY-AMYLPEROXY PIVALATE AS THE FREE RADICAL INITIATOR

Mohammed Tazi, Wayne, N.J., assignor to ISP Investments Inc., Wilmington, Del.

Filed Sep. 1, 1989, Ser. No. 401,682
The portion of the term of this patent subsequent to Jul. 3, 2007, has been disclaimed.
Int. Cl.[5] C08F *4/28, 4/34, 26, 10, 220/08*
U.S. Cl. 526—227 **1 Claim**

1. A polymerization process which comprises copolymerizing maleic anhydride and methyl vinyl ether at about 55° C. in the presence of t-amylperoxy pivalate as a free radical initiator in an amount of about 1–10% by weight of maleic anhydride present in acetone solvent to produce a substantially linear copolymer having a specific viscosity of about 0.38 as measured in a 1% solution in 2-butanone at 25° C. and having less than 1000 ppm residual monomer.

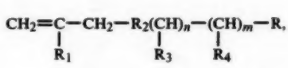
5,082,911

HARDENABLE, FLUORINATED COPOLYMER, PROCESS FOR ITS MANUFACTURE AND ITS APPLICATION IN VARNISHES AND PAINTS

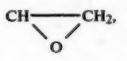
Patrick Kappler, Ecully, and Jean-Luc Perillon, Bernay, both of France, assignors to Atochem, Puteaux, France

Filed Apr. 20, 1990, Ser. No. 511,568
Claims priority, application France, Apr. 28, 1989, 89 05730
Int. Cl.[5] C08F *12/20, 14/18*
U.S. Cl. 526—249 **7 Claims**

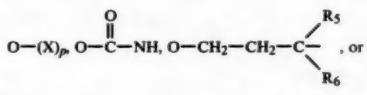
1. A hardenable copolymer containing the copolymerization radicals of a fluorinated monomer and a hydroxylated and/or epoxidized allyl ether, wherein:
(a) the fluorinated monomer radicals originate from the association of vinylidene fluoride and at least one fluorinated monomer selected from tetrafluoroethylene, chlorotrifluoroethylene, or hexafluoropropylene, and
(b) the allyl ether radicals originate from a compound of formula:

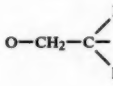


wherein
R is CH_2OH or



R_1 is H or CH_3,
R_2 is





wherein
p is a number from 0 to 3,
X is $(CH_2)_q$—O with q a number from 1 to 3,
R_5 and R_6, which can be identical or different, each being H, CH_2OH, CH_2—CH_2—OH, or CH_3,
R_3 and R_4, which can be identical or different, each being H or OH, and
n and m, which can be identical or different, and each being a number from 0 to 2.

5,082,912

POLYMER-TYPE POLYMERIZATION INITIATOR

Toru Kawaguchi, Gifu, Japan, assignor to Tomei Sangyo Kabushiki Kaisha, Japan

Filed Dec. 11, 1990, Ser. No. 639,336
Claims priority, application Japan, Dec. 14, 1989, 1-324235
Int. Cl.[5] C08F *26/10*
U.S. Cl. 526—264 **3 Claims**

1. A polymer-type polymerization initiator produced by copolymerizing (A) 40 to 60 mole % of an N-vinyllactam and (B) 60 to 40 mole % of at least one peroxy-fumarate, said peroxy-fumarate (B) being represented by the following formula:
wherein R1 is a linear alkyl, branched alkyl or cycloalkyl group containing not more than 18 carbon atoms, or an aromatic hydrocarbon group containing 6 to 18 carbon atoms; and

R2 is a linear alkyl, branched alkyl or cycloalkyl group containing not more than 13 carbon atoms, or a phenyl group.

5,082,913

TERPOLYMERS OF MALEIC ANHYDRIDE, ALKYL VINYL ETHERS AND ISOBUTYLENE AND CROSSLINKED PRODUCTS THEREOF

Mohammed Tazi, Wayne; Robert B. Login, Oakland, both of N.J., and Yoon T. Kwak, Brooklyn, N.Y., assignors to ISP Investments Inc., Wilmington, Del.

Filed Jul. 25, 1990, Ser. No. 557,354

The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.

Int. Cl.[5] C08F *210/10, 216/12, 222/06*

U.S. Cl. 526—272 4 Claims

1. A terpolymer of maleic anhydride, a C_1–C_5 alkyl vinyl ether and isobutylene in the molar ratio of about 1:0.4–0.9:0.1–0.6.

5,082,914

GRAFTED CELLULOSE ESTERS CONTAINING A SILICON MOIETY

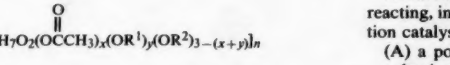
Phillip M. Cook, and Stephen S. Kelley, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 15, 1989, Ser. No. 450,961

Int. Cl.[5] C08G *81/00;* C08L *1/10;* B32B *9/06, 21/00*

U.S. Cl. 527—300 35 Claims

1. A grafted cellulose ester of the formula



wherein

R^1 is a silicon moiety of the formula

R^2 is, independently, —H, —$COCH_3$, —COC_2H_5, or —COC_3H_7,

R^3 is a straight chain or branched alkyl moiety of 2 to 20 carbon atoms substituted with at least one thiol group,

R^4 is a straight chain or branched alkyl moiety of 1 to 20 carbon atoms optionally substituted with at least one thiol group, or a straight chain or branched alkoxy moiety of 1 to 20 carbon atoms,

R^5, independently, has the same meaning as R^4,

x is about 0.1 to 2.9,

y is about 0.1 to 2.0, and

n is at least 30,

provided that (x+y) is in the range of 0.2 to 3.0.

5,082,915

SOLVENTLESS SILICONE COMPOSITIONS FOR RELEASE PAPER

Yasuaki Hara, and Masahiko Ogawa, both of Gunma, Japan, assignors to Shin-Etsu Chemical Company, Ltd., Tokyo, Japan

Filed Dec. 19, 1989, Ser. No. 452,445

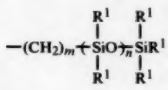
Claims priority, application Japan, Dec. 19, 1988, 63-320198

Int. Cl.[5] C08G *77/06*

U.S. Cl. 528—15 14 Claims

1. A solventless silicone composition for release paper comprising:

(a) 100 parts by weight of an organopolysiloxane having per molecule at least two silicon-bonded alkenyl radicals, and at least one silicon-bonded radical of the formula:



wherein R^1 is the same or different monovalent hydrocarbon radical, n is an integer of 5 to 100, and m is an integer of 2 to 8;

(b) 1 to 100 parts by weight of an organohydrogenpolysiloxane having per molecule at least two silicon-bonded hydrogen atoms; and

(c) a catalytically effective amount of a platinum catalyst; and the sum of the number of the alkenyl radicals in the organopolysiloxane of component (a) and that of SiH radicals in the methylhydrogenpolysiloxane of component (b), is at least 5.

5,082,916

ORGANOPOLYSILOXANE GRAFT POLYESTER AND ITS MANUFACTURING METHOD

Ryuzo Mikami; Makoto Yoshitake, and Tadashi Okawa, all of Ichihara, Japan, assignors to Dow Corning Toray Silicone Company, Ltd., Tokyo, Japan

Filed May 11, 1990, Ser. No. 522,753

Claims priority, application Japan, May 31, 1989, 1-138041

Int. Cl.[5] C08G *77/04*

U.S. Cl. 528—26 8 Claims

1. An organopolysiloxane graft-type polyester prepared by reacting, in the presence of an effective amount of hydrosilylation catalyst,

(A) a polyester containing at least one alkenyl group and having no unsaturated terminal groups, said polyester having a number average molecular weight of about 500 to about 5,000; and

(B) an organopolysiloxane containing one hydrosilyl group.

5,082,917

PIPERAZINE DERIVATIVES AS CHAIN EXTENDERS IN POLYUREA ELASTOMER SYSTEMS AND METHOD MAKING SAME

Wei-Yang Su, Austin; Dudley J. Primeaux, II, Elgin, and Donald H. Champion, Pflugerville, all of Tex., assignors to Texaco Chemical Co., White Plains, N.Y.

Filed May 29, 1990, Ser. No. 529,839

Int. Cl.[5] C08G *18/32, 18/16, 18/14*

U.S. Cl. 528—68 26 Claims

1. A polyurea elastomer comprising an (A) component which includes an isocyanate and a (B) component which includes (1) an amine terminated polyoxyalkylene polyol and (2) a chain extender which includes a minor amount of a tetraalkylpiperazine and a major amount of diethyltoluenediamine.

5,082,918

PHENOLIC RESIN COMPOSITIONS SUITABLE FOR THE MANUFACTURE OF PREPREG MATS

François Boinot, Lievin; Michel Cousin, Loison-sous-Lens; André Hochin, Bruay-en-Artois, and Nicolas Meyer, Lens, all of France, assignors to Norsolor, Paris, France

Division of Ser. No. 468,413, Jan. 22, 1990, Pat. No. 4,954,394, which is a continuation of Ser. No. 118,063, Nov. 6, 1987, Pat. No. 4,912,178, which is a continuation of Ser. No. 762,482, Aug. 5, 1985, abandoned. This application Aug. 31, 1990, Ser. No. 575,721

Claims priority, application France, Aug. 3, 1984, 84 12277

Int. Cl.[5] C08G *8/04, 14/02;* C08F *283/00*

U.S. Cl. 528—140 4 Claims

1. A viscosity controlling additive consisting essentially of a

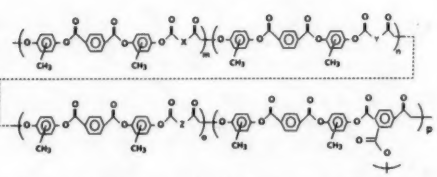
mixture of not less than 20% by weight of an alkali metal or alkaline earth metal metaborate and an alkaline-earth metal oxide.

5,082,919

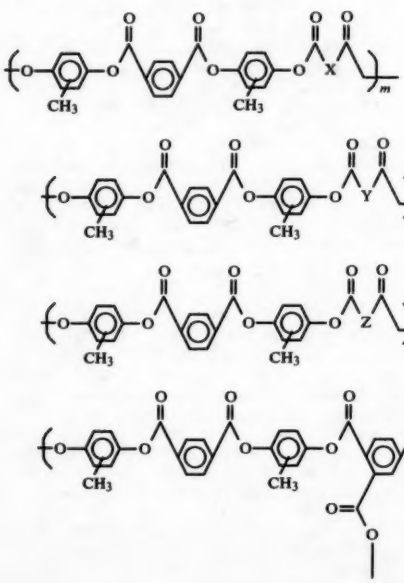
CROSSLINKED THERMOTROPIC LIQUID CRYSTALLING POLYARYLATE

Guerino Sacripante, Cambridge; T. Brian McAneney, Burlington; Stephan Drappel, Toronto; Sheau Van Kao, Oakville, and Lupu Alexandru, Toronto, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 315,664, Feb. 27, 1989, Pat. No. 4,973,539.
This application Jul. 30, 1990, Ser. No. 561,642
Int. Cl.[5] C08G *63/00, 67/00*
U.S. Cl. 528—176 **19 Claims**



1. A crosslinked thermotropic liquid crystalline polymer containing a number of reoccurring units and which polymer is represented by the following formulas:



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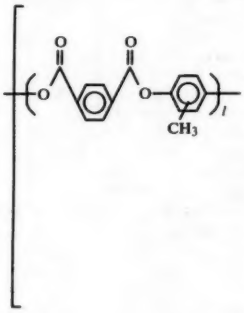
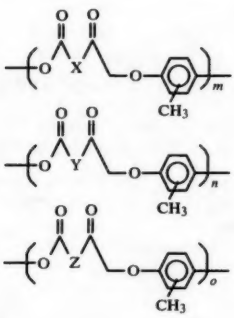
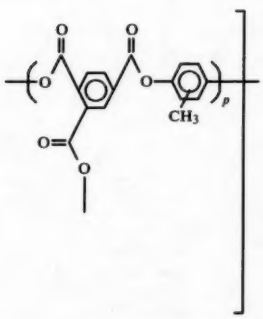






wherein x, y, and z are independently selected from the group consisting of alkyl, substituted alkyl, alkylene, and substituted alkylene, wherein l, m, n, and o represent the number of monomer segments present; p represents the amount of crosslinking component present; x, y, and z are independently selected from the group consisting of alkyl, substituted alkyl, alkylene, and substituted alkylene; and wherein the sum of l, m, n, o, and p is equal to 100.

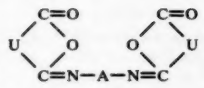
5,082,920

THERMOSETTING BIS(ISOIMIDE) RESIN COMPOSITIONS

John D. Harper, P.O. Box 33, Ste. 369, Long Beach, Calif. 90801

Filed Sep. 24, 1990, Ser. No. 586,964
Int. Cl.[5] C08G *83/00*
U.S. Cl. 528—205 **6 Claims**

1. In thermosetting polymer resin prepared by the reaction of an ethylenically unsaturated bis(isoimide) having the general structure



wherein U represents a divalent radical containing a carbon-to-carbon double bond and having from two to twelve carbon atoms, and A represents a divalent radical having from two to thirty carbon atoms, with a dihydric phenol having the general structure

HO—A′—OH

wherein A′ represents phenylene or substituted derivatives thereof and contains from six to thirty carbon atoms, the molar ratio of said bis(isoimide) to said dihydric phenol being between 50:1 and 1:1, and the reaction temperature being between 250° F. and 600° F., the improvement comprising forming a prepolymer of the bis(isoimide) and the dihydric phenol, adding thereto a trihydroxyaromatic or polyhydroxyaromatic modifier compound selected from the group consisting of trihydric phenols and novolacs, the quantity of trihydroxyaromatic or polyhydroxyaromatic modifier compound being from 0.2% to 25% by weight of the dihydric phenol, and then subjecting the mixture of prepolymer and modifier to further heating the form a cured resin.

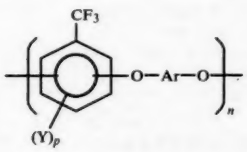
5,082,921

BENZOTRIFLUORIDE ARYL ETHER POLYMER

Theodore L. Parker, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 27, 1990, Ser. No. 573,607
Int. Cl.[5] C08G *65/40*
U.S. Cl. 528—219 **16 Claims**

1. A benzotrifluoride aryl ether polymer which comprises a polymer with a backbone structure corresponding to the formula:

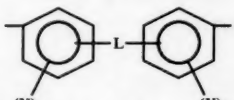


wherein

Ar is a divalent aromatic residue selected from the group consisting of:

A. an unsubstituted or inertly substituted phenylene, unsubstituted or inertly substituted naphthylene;

B.



wherein

L is a direct bond, or L is a divalent C_{1-15} hydrocarbyl radical, a divalent C_{1-8} halohydrocarbyl radical, —O—, —CO—, —S—, —SO—, —SO_2—, or —SS—,

X is individually in each occurrence a hydrogen radical, a monovalent C_{1-4} hydrocarbyl radical, a monovalent C_{1-4} halohydrocarbyl radical, or a halogen, and

m is a positive integer between 1 and 4 inclusive; and

C. a divalent bisphenyl fluorenyl or spiro indanyl radical; and

Y is individually in each occurrence a hydrogen radical, a monovalent C_{1-4} hydrocarbyl radical, or a halogen, and

p is a positive integer between 1 and 3 inclusive; and

n is a positive real number of about 5 or greater.

5,082,922

MODIFIED-ACRYLATE POLYMERS AND COATING COMPOSITIONS MADE THEREFROM

Larry B. Brandenburger, Lino Lakes, and Philip J. Ruhoff, Minneapolis, both of Minn., assignors to The Valspar Corporation, Minneapolis, Minn.

Filed Oct. 12, 1988, Ser. No. 256,614
Int. Cl.[5] C08G *63/08*; C08L *61/26*
U.S. Cl. 528—323 **12 Claims**

1. Method for producing a modified addition polymer from an ethylenically unsaturated monomer composition that includes at least one monomer having hydroxyl or carboxyl functionality, the method comprising polymerizing said monomer composition by dissolving it and a free radical initiator therefor in a solvent-free molten composition maintained at a temperature supporting addition polymerization of the monomer composition, the molten composition comprising a cyclic compound reactive via ring-opening with said hydroxyl or carboxyl functionality.

12. Method for producing a modified addition polymer comprising dissolving, in solvent-free epsilon-caprolactone maintained at a temperature of at least about 150° C., an ethylenically unsaturated monomer composition comprising from about 10 to about 40 mole percent of a hydroxyl or carboxyl-functional monomer together with a free radical initiator, and maintaining the resulting solution at a temperature supporting addition polymerization of the unsaturated monomer composition and bonding of ring-opened epsilon-caprolactone thereto by reaction with said hydroxyl or carboxyl groups.

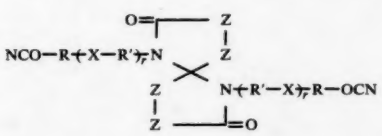
5,082,923

CROSSLINKED POLYCYANATO SPIRODILACTAM RESIN

Pen C. Wang, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 314,518, Feb. 23, 1989, Pat. No. 4,981,976.
This application May 17, 1990, Ser. No. 524,528
Int. Cl.[5] C08G *83/00*
U.S. Cl. 528—323 **15 Claims**

1. A crosslinked composition obtained by heating a spirodilactam of the formula



wherein R is an aromatic group of up to 15 carbon atoms and up to two aromatic rings, inclusive, R′ is R or an aliphatic group of up to 10 carbon atoms, inclusive, X is a direct valence bond or X is alkylene of up to 8 carbon atoms inclusive, oxy, thio, sulfonyl, carbonyl, dioxyphenylene, 2,2-di(oxyphenyl)-propane, di(oxyphenyl)sulfone or dioxydiphenylene, r is 0 or 1 and Z independently is $>C(Z')_2$ in which Z′ is hydrogen, lower alkyl or lower halo, or Z is such that two adjacent Z groups taken together form a ring system Z″ of from 5 to 7 ring atoms up to two of which are heteroatoms selected from nitrogen, oxygen or sulfur with the remainder of the ring atoms being carbon atoms, there being up to 15 carbon atoms in each Z″, two of which ring carbon atoms form a bridge between the carbonyl and spiro ring carbon atoms connected by the adjacent Z groups.

5,082,924

POLYAMIDE-ESTER FROM POLYETHYLENE GLYCOL MONOAMINE AND CATALYTIC PROCESS THEREFOR

George P. Speranza, Austin, and Jiang-Jen Lin, Houston, both of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Jan. 16, 1990, Ser. No. 465,290
Int. Cl.[5] C08G *69/44*
U.S. Cl. 528—339 11 Claims

1. A polyamide-ester produced by a process consisting essentially of reacting a polyethylene glycol monoamine having the formula $NH_2—(CH_2CH_2O)_x—H$, where x ranges from 2 to 6, with a first dicarboxylic acid and a second dicarboxylic acid to form the polyamide-ester, where the first and second dicarboxylic acids are independently selected from the group of dicarboxylic acids consisting of aliphatic and aromatic dicarboxylic acids, where the first and second acids are the same or different when they are both aromatic, and where the first and second acids must be different when they are both aliphatic, and where the polyamide-ester is a solid at room temperature.

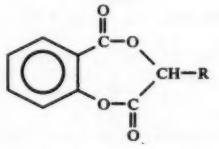
5,082,925

HOMOPOLYMERS AND COPOLYMERS OF SALICYLATE LACTONES

Shalaby W. Shalaby, Lebanon; Donald F. Koelmel, Glen Gardner, both of N.J., and Steven Arnold, New Hope, Pa., assignors to Ethicon, Inc., Somerville, N.J.

Filed Aug. 16, 1990, Ser. No. 568,392
Int. Cl.[5] C08G *63/08*
U.S. Cl. 528—354 18 Claims

1. A homopolymer of a monomer represented by the following formula:



wherein R is hydrogen or methyl.

5,082,926

POLYPEPTIDE WITH TYPE IV COLLAGEN CELL ADHESION, SPREADING AND MOTILITY ACTIVITY

Mary K. Chelberg; Photini-Effie C. Tsilibary, and James B. McCarthy, all of Minneapolis, Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Dec. 14, 1989, Ser. No. 450,419
Int. Cl.[5] C07K *7/08;* A61K *37/00*
U.S. Cl. 530—326 2 Claims

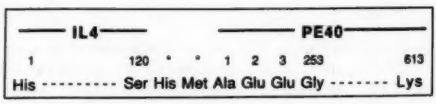
1. A polypeptide having an amino acid sequence corresponding substantially to amino acid residues 1263 through 1277 of the continuous collagenous region of the major triple helical domain of the α1 chain of type IV collagen, wherein said polypeptide promotes cellular adhesion and spreading, and further wherein said polypeptide has an amino acid sequence of about 15 residues.

5,082,927

SELECTIVELY CYTOTOXIC IL-4-PE40 FUSION PROTEIN

Ira Pastan, Potomac; David FitzGerald, Silver Spring, and Masato Ogata, Rockville, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 911,227, Sep. 24, 1986, Pat. No. 4,892,827. This application May 12, 1989, Ser. No. 351,448
Int. Cl.[5] C07K *15/00;* A61K *37/02, 39/104*
U.S. Cl. 530—351 4 Claims



1. A functionally active recombinant IL-4-PE40 fusion protein that selectively kills cells bearing IL-4 receptors, without killing cells lacking IL-4 receptors, wherein the fusion protein has ADP ribosylating properties.

5,082,928

METHOD OF PREPARING CONJUGATED ANTIBODIES

Mark P. Best, 146 Caversham Valley Road, Dunedin, New Zealand

Continuation of Ser. No. 875,093, Jun. 17, 1986, abandoned. This application Nov. 13, 1989, Ser. No. 434,484
Claims priority, application New Zealand, Jun. 17, 1985, 212437
Int. Cl.[5] C07K *3/06;* A61K *39/00*
U.S. Cl. 530—389 11 Claims

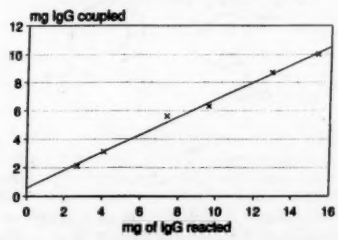
1. A method of preparing a conjugated antibody comprising
(i) attaching a substantially pure antigen to a solid phase;
(ii) passing an antibody containing composition over said solid phase such that said antibody binds to said attached antigen to form a bound antigen-antibody complex;
(iii) passing a reactive chelating agent over said bound antigen-antibody complex to chelating said conjugating agent to said complex; and
(iv) removing the resultant conjugated antibody from said solid phase.

5,082,929

IMMOBILIZATION OF GLYCOCOMPOUNDS AND GLYCOCONJUGATES

That T. Ngo, Irvine, and Gilbert Fung, Valinda, both of Calif., assignors to BioProbe International, Inc., Tustin, Calif.

Filed Aug. 8, 1990, Ser. No. 564,908
Int. Cl.[5] C07K *17/14;* C12N *11/14*
U.S. Cl. 530—391 16 Claims



1. A method for immobilization of a glycoconjugate on a hydrazide gel resistant to oxidation by an oxidizing agent, comprising:

preparing a solution of said glycoconjugate and said oxidiz-

ing agent which provides an oxidized glycoconjugate upon incubation;

bringing said solution containing said glycoconjugate and oxidizing agent directly into contact with said hydrazide gel without prior removal of said oxidizing agent from said solution; and

reacting said oxidized glycoconjugate with said hydrazide gel.

5,082,930

COUPLING AGENTS FOR JOINING RADIONUCLIDE METAL IONS WITH BIOLOGICALLY USEFUL PROTEINS

Robert A. Nicolotti, Somers, N.Y., and Richard T. Dean, Downingtown, Pa., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

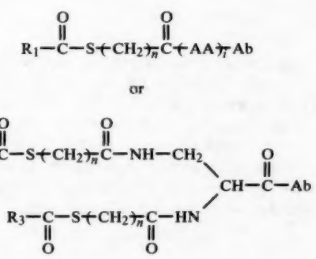
Continuation-in-part of Ser. No. 868,800, May 29, 1986, Pat. No. 4,861,869. This application Nov. 23, 1988, Ser. No. 275,415

The portion of the term of this patent subsequent to Mar. 22, 2005, has been disclaimed.

Int. Cl.[5] C07K *3/00*

U.S. Cl. 530—402 **29 Claims**

6. An antibody conjugate of the formula:



or

wherein Ab is the residue of an antibody or fragment thereof; and R_1, R_2, and R_3 are the same or different and each represents a radical selected from the group consisting of alkyls having from 1 to 6 carbon atoms, aryls having from 6 to 8 carbon atoms and alkaryls having 7 to 9 carbon atoms, any of which can be substituted with one or more hydroxyl, alkoxy, carboxy or sulfonate groups; n is either 1 or 2; AA are independently α or β amino acids linked to each other by amide bonds; and i is an integer of from 2 to 6.

5,082,931

TYPE II BACTERIAL FC RECEPTORS

Michael D. P. Boyle, Gainesville, Fla., and Michele Yarnall, Pullman, Wash., assignors to University of Florida Research Foundation, Inc., Gainesville, Fla.

Division of Ser. No. 836,743, Mar. 6, 1986, Pat. No. 4,883,754. This application Aug. 21, 1989, Ser. No. 396,275

The portion of the term of this patent subsequent to Nov. 28, 2006, has been disclaimed.

Int. Cl.[5] C07K *3/20, 3/28*

U.S. Cl. 530—413 **6 Claims**

1. A method for preparing a type II proteinaceous, antigenic factor derived form a group A streptococcus selected from the group consisting of (1) a factor which is a receptor for the Fc region of human IgG_3 and which exhibits a major diffuse protein band on polyacrylamide gel electrophoresis and which has a molecular weight of approximately 38,000 daltons and (2) a factor which is a receptor for the Fc region of human IgG_1, IgG_2 and IgG_4 and which exhibits a major diffuse protein band on polyacrylamide gel electrophoresis and which has a molecular weight of approximately 56,000 daltons comprising:

1) solubilizing said factor from a group A streptococcus,

2) purifying said factor by affinity chromatography on an immobilized IgG sub-class or sub-classes, and

3) separating said factors.

5,082,932

PROCESS FOR PREPARING SUBSTITUTED 1,2-NAPHTHOQUINONE-(2)-DIAZIDE-4-SULFONIC ACID ESTERS AND THEIR USE IN A RADIATION-SENSITIVE MIXTURE

Herbert Siegel, Hofheim/Taunus, and Siegfried Scheler, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

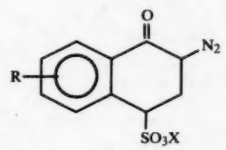
Filed Nov. 3, 1989, Ser. No. 431,182

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1988, 3837499

Int. Cl.[5] C07C *303/28, 309/35*

U.S. Cl. 534—557 **18 Claims**

1. A process for preparing a 1,2-naphthoquinone-(2)-diazide-4-sulfonic acid ester of the formula



I

wherein R denotes a halogen, alkoxy or alkoxycarbonyl substituent in at least one of the positions 5, 6, 7 or 8, and wherein X denotes an aryl group, which comprises the steps of:

a) nitrosating a correspondingly substituted β-naphthol to form an o-quinone oxime;

b) sulfonating said o-quinone oxime in position 4 with alkali hydrogen sulfite and acid and reducing the resultant compound to form a 1-amino-2-hydroxy-4-naphthalenesulfonic acid;

c) oxidizing said 1-amino-2-hydroxy-4-naphthalenesulfonic acid to form an o-1,2-naphthoquinone-4-sulfonic acid;

d) reacting said o-1,2-naphthoquinone-4-sulfonic acid with toluenesulfonohydrazide in an organic solvent at a temperature from about 20° to 100° C. to form a 1,2-naphthoquinone-(2)-diazide-4-sulfonic acid;

e) reacting said 1,2-naphthoquinone-(2)-diazide-4-sulfonic acid with chlorosulfonic acid or a mixture of chlorosulfonic acid and thionyl chloride to form a 1,2-naphthoquinone-(2)-diazide-4-sulfonyl chloride; and

f) condensing said sulfonyl chloride with a phenolic compound.

5,082,933

ANTITUMOR ANTIBIOTIC BMY-42448

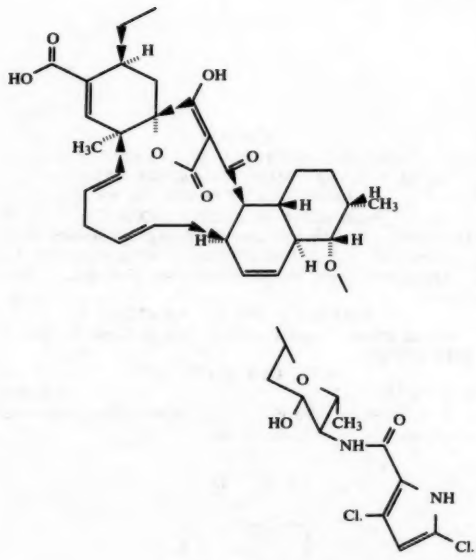
Daniel R. Schroeder, Higganum; Kin S. Lam, Cheshire; Grace A. Hesler, Branford; Donald R. Gustavson, Torrington, all of Conn.; Koji Tomita, Tokyo, Japan, and Ronald L. Berry, North Branford, Conn., assignors to Bristol-Myers Squibb Co., New York, N.Y.

Filed Jan. 10, 1990, Ser. No. 463,220

Int. Cl.[5] C07H *17/00*

U.S. Cl. 536—16.8 **1 Claim**

1. The antibiotic BMY-42448 having the structure:



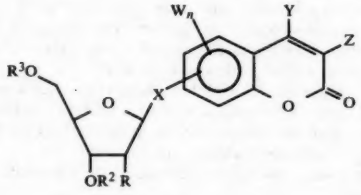
5,082,934

COUMARIN DERIVATIVES FOR USE AS NUCLEOTIDE CROSSLINKING REAGENTS

Don Saba; Richard S. Glass, both of Tucson, Ariz., and Kenichi K. Yabusaki, Albany, Calif., assignors to Naxcor, Albany, Calif.

Filed Apr. 5, 1989, Ser. No. 333,632
Int. Cl.[5] C07H *19/067*
U.S. Cl. 536—17.6 **10 Claims**

1. A photoactivatable compound wherein a coumarin moiety is linked by a linking group X to a sugar moiety, said compound having the formula



wherein

n is 0, 1, 2, or 3;

each W independently represents a halogen, nitro, cyano, cabonyl, carboxyl, hydroxy, amido or amino group; an unsubstituted hydrocarbyl group of less than 15 atoms; or a hydrocarbyl group of less than 15 atoms and being substituted with at least one of said groups;

Y and Z independently represent H or lower alkyl;

X is an organic linking group of 1 to 5 carbon atoms; 0 to 4 hetero atoms selected from the group consisting of O, S, and N; and 0 to 2m halogen atoms, where m is the number of carbon atoms in X, and wherein a single linking chain of 1 to 4 atoms in X joins the phenyl ring of said coumarin moiety to the 1-position of said sugar moiety;

R is H or —OR^1;

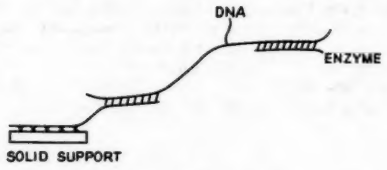
R^1, R^2, and R^3 independently represent H or a hydroxyl-protecting or hydroxyl-coupling organic group capable of coupling or protecting a hydroxyl group during polynucleotide synthesis or R^2 or R^3 represent a nucleotide of a polynucleotide linked to said compound by a 3'–5' phosphodiester linkage.

5,082,935

DIAGNOSTIC REAGENTS MADE BY ATTACHING CYTIDINE CONTAINING NUCLEIC ACID PROBES TO AMINO FUNCTIONALIZED SOLID SUPPORTS BY BISULFITE MEDIATED TRANSAMINATION

Kenneth A. Cruickshank, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Dec. 15, 1988, Ser. No. 284,545
Int. Cl.[5] C07H *21/00*
U.S. Cl. 536—27 **16 Claims**



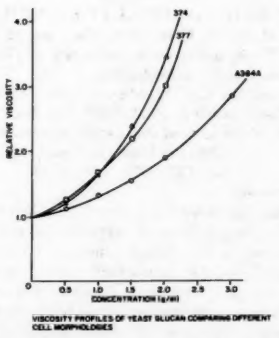
1. A diagnostic reagent comprising a polynucleic acid probe having a specific binding sequence and having a cytidine region of one or more cytidines outside of the specific binding sequence and wherein cytidines in the specific binding sequence are 5-methylcytidines, wherein the polynucleic acid probe is bound to an amino functionalized support by a bisulfite mediated transamination between a cytidine outside the specific binding sequence and an amino group on the support.

5,082,936

GLUCAN COMPOSITION AND PROCESS FOR PREPARATION THEREOF

Spiros Jamas; ChoKyun Rha, and Anthony J. Sinskey, all of Boston, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 675,927, Nov. 28, 1984, Pat. No. 4,810,646. This application Jan. 17, 1989, Ser. No. 297,752
Int. Cl.[5] C08B *37/00*; C12N *1/18*
U.S. Cl. 536—123 **19 Claims**



VISCOSITY PROFILES OF YEAST GLUCAN COMPARING DIFFERENT CELL MORPHOLOGIES

1. Whole glucan particles isolated from glucan-containing cell walls, the isolated glucan particles substantially retaining the in vivo glucan morphology, said whole glucan particles having $\beta(1\text{-}3)$ linkages sufficiently altered to provide a significant difference in the hydrodynamic volume of said altered

whole glucan particles compared to the hydrodynamic volume of non-altered whole glucan particles.

5,082,937

BENZODIAZEPINES AND APPLICATIONS IN THERAPEUTIC PRACTICE

Alain P. Calvet, L'Hay Les Roses; Jean-Louis Junien, Sevres; Yves R. Pascal, Rueil Malmaison; Xavier B. Pascaud, Paris, and Francois J. Roman, Vitry Sur Seine, all of France, assignors to Jouveinal S.A., Paris, France

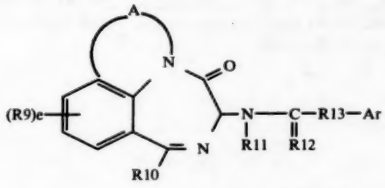
Filed Sep. 18, 1990, Ser. No. 584,150

Claims priority, application France, Sep. 28, 1989, 89 12700

Int. Cl.[5] A61K *31/55;* **C07D** *471/06;* **C07G** *487/06*

U.S. Cl. 540—496 **22 Claims**

1. Benzodiazepines of Formula (I):



(I)

in which,

R9 is hydrogen, nitro, halogen, cyano, trifluoromethyl, hydroxy, lower alkyl, lower alkowy, —COOR20, —N(R21)—R22;

R10 is a phenyl, optionally mono- to tri-substituted by identical or different groups selected from among halogen, lower alkyl, lower alkoxy, cyano, nitro or trifluoromethyl;

R11 is hydrogen or lower alkyl;

R12 is an oxygen atom or a sulphur atom;

R13 is a —N(R24)-group;

R20 is hydrogen or lower alkyl;

R21 and are identical or different and may be hydrogen or

R22 an alkyl group;

R24 is hydrogen or lower alkyl;

Ar is an aromatic or heteraromatic hydrocarbon comprising one or two condensed rings, each of the rings comprising from 5 to 7 atoms including from 0 to 2 nitrogen heteroatoms; this aromatic or heteroaromatic being optionally mono- or di-substituted by identical or different groups selected from among lower alkyl, carboxyl, lower alkoxy carbonyl, sulphonyl, sulphamoyl, cyano, nitro, trifluoromethyl or, provided that R12 is sulphur, halogen or lower alkoxy groups:

A is [—CH(R1)—]a in which R1 is hydrogen or lower alkyl;

a is 2, 3 or 4;

e is 1 or 2.

5,082,938

ORGANIC MATERIALS CONTAINING POLY(OXYALKYLENE) MOIETIES HAVING ENHANCED FUNCTIONALITY AND THEIR PREPARATION

Edward W. Kluger, Pauline, and David J. Moody, Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Mar. 1, 1990, Ser. No. 486,992

Int. Cl.[5] C07C *211/46, 217/28*

U.S. Cl. 544—38 **12 Claims**

1. A compound having the formula

$$Y—(Z)_{1-6}$$

wherein Y is the residue of a reactant selected from: anilines; 1,2,3,4-tetrahydroquinolines; 3,4-dihydro-2H-1,4-benzoxazines; 2-aminothiazoles; indoles; 2,3-dihydroindoles; carbazoles; naphthylamines; phenoxazines; phenothiazines; diphenylamines; julolidines; 2-aminothiophenes; and aminopyridines, and each Z is a poly(oxyalkylene) moiety having a glycidol segment containing one or more glycidol residues, provided that said compound comprises at least two of said glycidol residues, and wherein a primary oxy site of said glycidol segment is linked directly to a first epoxide segment containing at least one residue of an epoxide of three or more carbons, wherein in said first epoxide segment said epoxide residue of three or more carbons is either directly linked to said glycidol segment at said primary oxy site or is positioned in said segment within ten epoxide residues of said primary oxy site, said first epoxide segment being linked through a secondary oxy site directly to a second epoxide segment containing at least one epoxide residue having a primary terminal hydroxyl, and wherein a secondary hydroxyl of said glycidol segment is linked directly to a third epoxide segment having a primary terminal hydroxyl.

5,082,939

PYRIDAZINE DERIVATIVES

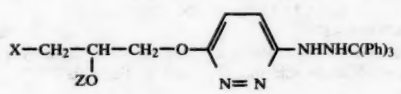
Carlo Farina, Como; Mario Pinza, Milan; Alberto Cerri, Pavia, and Francesco Parravicini, Milan, all of Italy, assignors to I.S.F. Societa per Azioni, Italy

Continuation of Ser. No. 140,850, Jan. 5, 1988, Pat. No. 4,873,328. This application Jul. 25, 1989, Ser. No. 384,947

Int. Cl.[5] C07D *237/22*

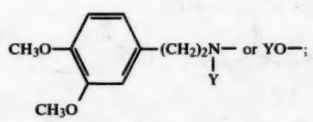
U.S. Cl. 544—239 **10 Claims**

1. A compound of the formula (6):



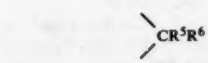
wherein

X is



Y and Z are both hydrogen; or

Y and Z together form a protecting group



wherein R^5 is hydrogen or C_{1-3}alkyl and R^6 is C_{1-3}alkyl or phenyl; and

Ph is phenyl.

5,082,940

PROCESS FOR THE PRODUCTION OF OXIDES OF AROMATIC TERTIARY AMINES

Franz Legrand, Quaregnon; Andre Lecloux, Meise, and Paul Deschrijver, Asse-Zellik, all of Belgium, assignors to Interox (Societe Anonyme), Brussels, Belgium

Continuation of Ser. No. 909,946, Sep. 22, 1986, abandoned. This application Sep. 5, 1990, Ser. No. 577,800

Claims priority, application France, Nov. 25, 1985, 85 17492

Int. Cl.[5] C07D *213/89, 237/26;* **C07C** *291/04*

U.S. Cl. 544—353 **9 Claims**

1. A process for the production of oxides of heterocyclic tertiary amines, comprising:

oxidizing a heterocyclic tertiary amine selected from the group consisting of pyridine, 2-picoline, 3-picoline, and quinoxaline by means of hydrogen peroxide, the amine:-hydrogen peroxide molar ratio being kept between about 1.1 and 1.8, in an aliphatic alcohol solvent medium in the presence of a catalyst selected from the group consisting of selenium, selenium oxide, selenious acid, selenic acid, and an organo selenium compound.

5,082,941

PROCESS FOR PREPARING THE PIPERAZINE SALT OF 2,5-DIHYDROXYBENZENESULPHONIC ACID MONOTOSYLATE

Josep M. R. Baro, Esplugues de Llobregat; Salvador M. Giral, Terrassa, and Josep M. F. Pons de Vall, Barcelona, all of Spain, assignors to Esteve Quimica S.A., Barcelona, Spain

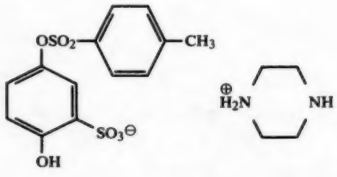
Filed Jul. 25, 1990, Ser. No. 557,918

Claims priority, application Spain, Aug. 3, 1989, 89 02754

Int. Cl.[5] C07D *295/00;* **C07C** *303/32*

U.S. Cl. 544—358 **3 Claims**

1. A process for preparing a piperazine salt of 2,5 dihydroxybenzenesulphonic acid monotosylate, of Formula I,



comprising:

1) tosylating either a diethylamine salt or an ammonium salt of 2,5-dihydroxybenzenesulphonic acid in aqueous ammonia to produce an ammonium salt of 2,5-dihydroxybenzenesulphonic acid monotosylate;

2) mixing the ammonium salt of 2,5-dihydroxybenzene sulphonic acid monotosylate with piperazine in an aqueous medium to obtain a piperazine disalt;

3) isolating the corresponding piperazine disalt;

4) treating the piperazine disalt with an excess of piperazine in an aqueous-alcohol medium and

5) isolating the product of Formula I.

5,082,942

NOVEL DERIVATIVES OF TETRAHYDRO-2,3,6,7,1H,5H,11H-(1)BENZOPYRANO(6,7,8,IJ)QUINOLIZINONE-11 USABLE AS MARKERS OF ORGANIC COMPOUNDS FOR THE DETECTION OF SAID COMPOUNDS BY CHEMILUMINESCENCE OR FLUORESCENCE

Georges Mahuzier; Joseph Chalom, both of Paris; Robert Farinotti, Champigny sur Marne, and Michel Tod, Paris, all of France, assignors to Laboratories Eurobio, Paris, France

PCT No. PCT/FR89/00277, § 371 Date Jan. 31, 1991, § 102(e) Date Jan. 31, 1991, PCT Pub. No. WO89/12052, PCT Pub. Date Dec. 14, 1989

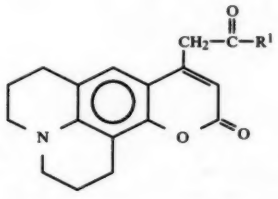
PCT Filed Jun. 2, 1989, Ser. No. 613,644

Claims priority, application France, Jun. 2, 1988, 88 07355

Int. Cl.[5] C07D *491/147*

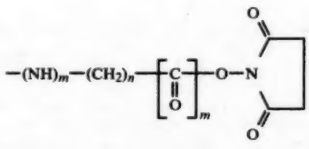
U.S. Cl. 546—66 **16 Claims**

1. A derivative of tetrahydro-2,3,6,7,1H,5H,11H-(1)benzopyrano (6,7,8-ij)quinolizinone, characterized in that it complies with the formula:

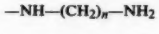


(I)

in which R^1 represents the radical of formula:

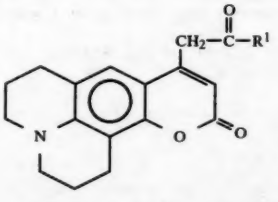


in which m is equal to 0 or to 1 and n is equal to 0 or is an integer from 1 to 12, provided that n is equal to 0 when m is equal to 0, or the radical of formula:



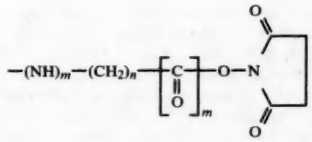
in which n has the meaning given hereinbefore.

14. A process for the detection of a compound having a primary or secondary amine function by liquid chromatography, characterized in that it consists of reacting the compound to be detected with a derivative complying with the formula:



(I)

in which R^1 represents the radical of formula:



in which m=0 or 1 and n=0 or an integer from 1 to 12, provided that n=0 when m=0, to form a derivative of the compound to be detected, then carrying out a separation of said derivative by liquid chromatography and then detecting the derivative by absorptiometry, fluorimetry or chemiluminescence.

5,082,943

NOVEL IMIDAZOLE DERIVATIVES

Susumu Okabe, Kyoto; Mitsuo Masaki; Tomio Yamakawa, both of Chiba; Hitoshi Matsukura, Saitama, and Yutaka Nomura, Chiba, all of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan

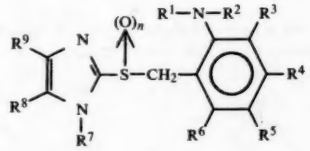
Continuation of Ser. No. 392,364, Aug. 10, 1989, abandoned. This application Feb. 20, 1991, Ser. No. 658,424

Claims priority, application Japan, Aug. 10, 1988, 63-199528; Nov. 24, 1988, 63-297856

Int. Cl.[5] C07D *401/12, 215/38, 233/66, 403/12*

U.S. Cl. 546—210 **12 Claims**

1. An imidazole derivative having the formula



wherein

each of R^1 and R^2 independently is hydrogen, an alkyl group having 1–8 carbon atoms, a cycloalkyl group having 5–8 carbon atoms, an aryl group, an aralkyl group having 1–4 carbon atoms in its alkyl chain, or a halogen atom-substituted alkyl group having 1–8 carbon atoms, or R^1 and R^2 are combined to form together with the nitrogen atom to which R^1 and R^2 are attached, a piperidine ring;

each of R^3, R^4, R^5 and R^6 independently is hydrogen, a halogen atom, an alkoxy group having 1–6 carbon atoms, an araylkyloxy group having 1–4 carbon atoms in its alkyl chain, an alkyl group having 1–6 carbon atoms, an alkoxycarbonyl gruop having 2–7 carbon atoms, nitro, amino, an acyl having 1–6 carbon atoms, a fluorine substituted alkyl group having 1–6 carbon atoms, or a fluorine substituted alkoxy group having 1–6 carbon atoms;

each of R^8 and R^9 independently is hydrogen, a halogen atom, an alkoxy group having 1–6 carbon atoms, an alkyl group having 1–5 carbon atoms, an alkoxycarbonyl group having 2–7 carbon atoms, nitro, amino, an acyl having 1–6 carbon atoms, a fluorine substituted alkyl group having 1–6 carbon atoms, or a fluorine substituted alkoxy group having 1–6 carbon atoms, provided that where R^1 and R^2 are combined to form a piperidine ring, R^8 and R^9 may be combined to form, together with two carbon atoms of the imidazole ring to which R^8 and R^9 is attached, a 5–8 membered alicyclic ring;

R^7 is, where R^8 and R^9 are not combined, hydrogen and, where R^8 and R^9 are combined to form the alicyclic ring, hydrogen, an alkyl group having 1–6 carbon atoms which may have at least one substituent selected from the group consisting of an aryl group, hydroxyl, an alkoxy group having 1–6 carbon atoms, and a halogen atom, an aryl gruop which may have at least one substituent selected from the group consisting of an alkyl group having 1–6 carbon atoms, an alkoxy group having 1–6 carbon atoms, and a halogen atom, an arylcarbonyl group which may have at least one substituent selected from the group consisting of an alkyl group having 1–6 carbon atoms, an alkoxy group having 1–6 carbon atoms, and a halogen atom; and

n is 0 or 1.

5,082,944

PRODUCTION OF PYRIDINE-3-SULFONIC ACID

Rolf Losch, Ketsch; Winfried Orth, Hassloch/Pflaz; Wolfgang Weiss, Neckarhausen, and Hans W. Kleffner, Battenberg, all of Fed. Rep. of Germany, assignors to Rutgerswerke AG, Fed. Rep. of Germany

Filed Oct. 31, 1990, Ser. No. 606,089

Int. Cl.[5] C07D *213/71, 213/62*

U.S. Cl. 546—294 **3 Claims**

1. A process for the preparation of pyridine-3-sulfonic acid comprising oxidizing 3-chloro-pyridine to form 3-chloro-pyridine-N-oxide, reacting the latter with a sulfonating agent to form 3-sulfonic acid-pyridine-N-oxide and reducing the latter by hydrogenation in the presence of Raney nickel to form pyridine-3-sulfonic acid.

5,082,945

PROCESS FOR THE PREPARATION OF PERHALOALKYLTHIOETHERS

Claude Wakselman, Paris; Marc Tordeux, Sceaux; Bernard Langlois, Lyons; Jean-Louis Clavel, Ecully, and Roland Nantermet, Lyons, all of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France

Filed Dec. 12, 1989, Ser. No. 448,983

Claims priority, application France, Dec. 13, 1988, 88 16710; Oct. 9, 1989, 89 13371

Int. Cl.[5] C07D *231/14;* **C07C** *49/16*

U.S. Cl. 548—110 **16 Claims**

1. A process for the preparation of perhaloalkylthioethers which comprises bringing into contact, optionally in a solvent:

(1) a reducing agent comprising a metal selected from the group consisting of zinc, cadmium, aluminium and manganese, with sulphur dioxide,

(2) a disulphide, and

(3) a perfluoroalkyl halide.

5,082,946

Patent Not Issued For This Number

5,082,947

3-PERFLUOROALKYL-5-HYDROXYISOXAZOLES

Shinzaburo Sumimoto, Ashiya; Ichiro Ishizuka, Toyono; Shiro Ueda, Osaka, and Hiroyuki Kai, Koka, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

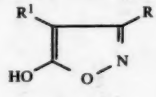
Continuation of Ser. No. 915,015, Oct. 3, 1986, abandoned. This application Jun. 19, 1990, Ser. No. 541,178

Claims priority, application Japan, Oct. 9, 1985, 60-255709

Int. Cl.[5] C07D *261/12*

U.S. Cl. 548—243 **9 Claims**

1. A compound of the formula:



in which:

R is perfluoroalkyl having 1 to 5 carbon atoms; R^1 is phenyl, or phenyl substituted with one or a plurality of substituents selected from the group consisting of chlorine, fluorine, alkyl having 1 to 3 carbon atoms and alkoxy having 1 to 3 carbon atoms, or phenyl substituted with methylenedioxy or ethylenedioxy, or a salt thereof.

5,082,948

IMIDAZOLE DERIVATIVE

Minoru Tokizawa; Takemitsu Asaoka, both of Narita; Hideaki Matsuda, Abiko, and Tatsuhiko Katori, Ibaraki, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 277,308, Nov. 29, 1988, Pat. No. 4,925,953. This application Feb. 22, 1990, Ser. No. 484,368

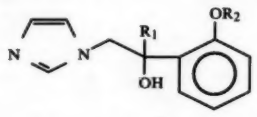
Claims priority, application Japan, Dec. 9, 1987, 62-311576

The portion of the term of this patent subsequent to May 15, 2007, has been disclaimed.

Int. Cl.[5] C07D *233/60*

U.S. Cl. 548—342 **3 Claims**

1. The imidazole of the formula:



wherein R_1 is t-butyl and R_2 is methyl.

5,082,949

PHENYLPYRAZOLECARBOXYLIC ACID DERIVATIVE PREPARATION

Erich Sohn, Esslingen; Reinhard Handte, Gablingen; Hilmar Mildenberger, Kelkheim; Helmut Bürstell, Frankfort am Main; Klaus Bauer, Hanau, and Hermann Bieringer, Eppstein/Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

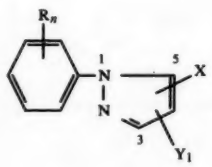
Division of Ser. No. 104,820, Oct. 2, 1987, Pat. No. 4,891,057. This application Oct. 31, 1989, Ser. No. 429,384

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1986, 3633840

Int. Cl.[5] C07D *231/14*

U.S. Cl. 548—378 **10 Claims**

1. A process for preparing a compound of formula I, or a salt or quaternization product thereof,



I

wherein:

R, in each case independently of one another, is halogen, hydroxyl, cyano, nitro, (C_1–C_4)alkyl, halo(C_1–C_4)alkyl, (C_1–C_4)alkoxy(C_1–C_4)alkyl, (C_1–C_6)alkoxy, (C_1–C_6)alkoxy(C_1–C_4)alkoxy, halo(C_1–C_6)alkoxy, (C_1–C_4)alkylthio, halo(C_1–C_4)alkylthio, carboxyl, (C_1–C_4)alkoxycarbonyl, (C_1–C_4)alkylsulfinyl, halo(C_1–C_4)alkylsulfinyl, (C_1–C_4)alkylsulfonyl, halo(C_1–C_4)alkylsulfonyl, (C_1–C_4)alkylsulfonyloxy, halo(C_1–C_4)alkylsulfonyloxy, phenyl, halophenyl, phenoxy or halophenoxy;

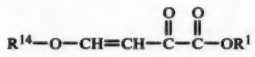
X is oriented in the 3- or 5- position of the pyrazole ring and is a radical of formula

Y is hydrogen;

R^1 is hydrogen, (C_1–C_{12})alkyl, (C_1–C_{12})alkyl which is monosubstituted or polysubstituted by halogen and/or monosubstituted or disubstituted by hydroxyl, (C_1–C_6)alkoxy, (C_1–C_4)alkoxy(C_1–C_4)alkoxy, (C_1–C_4)alkylthio, (C_1–C_4)alkylsulfinyl, (C_1–C_4)-alkylsulfonyl, mono- or di-(C_1–C_4-alkyl)amino, cyano, aminocarbonyl, (C_1–C_4)alkylcarbonyl, (C_1–C_4-alkoxy)carbonyl, cyclo(C_3–C_7)alkyl, tri(C_1–C_4)alkylsilyl, benzyloxy, benzyloxyethoxy, phenyl, phenyl which is substituted by halogen or (C_1–C_4)alkyl, phenoxy or phenylthio which both are unsubstituted or substituted by halogen or (C_1–C_4)alkyl; or is (C_3–C_6)alkenyl, halo(C_3–C_6)alkenyl, cyclo(C_3–C_7)alkyl which is unsubstituted or substituted by halogen or (C_1–C_4)alkyl; cyclo(C_5–C_7)alkenyl which is unsubstituted or substituted by halogen or (C_1–C_4)alkyl; or is (C_3–C_6)alkynyl, 1,2-epoxyprop-3-yl, phenyl or phenyl which is monosubstituted or disubstituted by halogen, nitro, cyano, (C_1–C_4)alkyl, (C_1–C_4-alkoxy)carbonyl or (C_1–C_4)alkoxy; or an agriculturally acceptable cation;

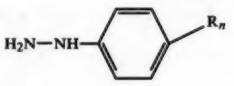
n is an integer from 0 to 5;

which process comprises reacting a compound of formula II



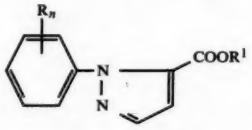
(II)

wherein R^{14} is (C_1–C_6)alkyl and R^1 has the above-mentioned meaning, with a compound of formula III

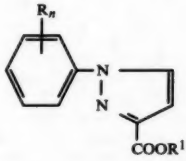


III:

wherein R and n have the above-mentioned meanings, to obtain a compound of formula Ia or a compound of formula Ib



Ia



Ib

5,082,950

PROCESS FOR PREPARING 5-AROYL-2,3-DIHYDRO-1H-PYRROLIZINE-1,1-DICARBOXYLATES (II) AND INTERMEDIATES THEREFOR

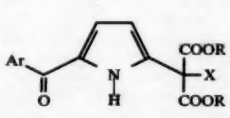
Joseph M. Muchowski, Sunnyvale, and In-Seop Cho, Mountain View, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Oct. 12, 1990, Ser. No. 596,802

Int. Cl.[5] C07D *487/04, 207/337*

U.S. Cl. 548—453 **18 Claims**

1. A process for producing a compound of formula III,

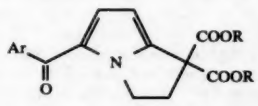


(III)

in which X is hydrogen, each R is independently lower alkyl and Ar is aryl,

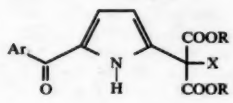
which comprises treating an aroyl pyrrole with a dialkyl halomalonate and an alkyl radical in an aprotic solvent.

7. A process for producing a compound of formula I,



(I)

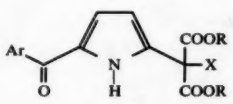
in which each R is independently lower alkyl and Ar is aryl, which comprises heating a compound of formula III,



(III)

in which X is alkoxycarbonyl or hydrogen, and R and Ar are as defined above, with bromide or iodide ion and a base in a 1,2-dihaloalkane.

12. A compound of formula III,



(III)

in which

X is alkoxycarbonyl, acyloxy or hydrogen, each R is independently lower alkyl, and Ar is aryl.

5,082,951

PROCESS FOR PREPARING 5-AROYL-2,3-DIHYDRO-1H-PYRROLIZINE-1,1-DICARBOXYLATES (I) AND INTERMEDIATES THEREFOR

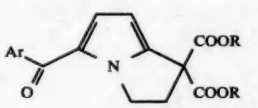
Joseph M. Muchowski, Sunnyvale, and In-Seop Cho, Mountain View, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Oct. 12, 1990, Ser. No. 596,843

Int. Cl.[5] C07D *487/04, 207/337*

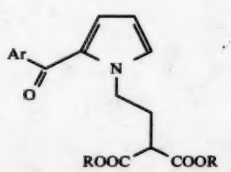
U.S. Cl. 548—453 **13 Claims**

1. A process for producing a compound of formula



(I)

in which each R is independently lower alkyl and Ar is aryl, which comprises treating a compound of formula IV,



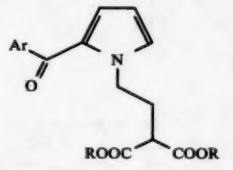
(IV)

in which

R and Ar are defined as above,

with a high valence metal ion in an alkanoic acid or polar aprotic solvent.

4. A compound of formula IV,



(IV)

in which

each R is independently lower alkyl; and Ar is aryl.

5,082,952

PROCESS FOR THE PREPARATION OF METALLOCENE COMPLEXES

Kurt Meier, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 27, 1986, Ser. No. 867,113

Claims priority, application Switzerland, Jun. 6, 1985, 2397/85

Int. Cl.[5] C07F *17/02*

U.S. Cl. 549—3 **11 Claims**

1. The process which comprises allowing a first complex of the formula

$$[R^3R^2Fe^{II}]^+(LF_m)^-$$

in which

R^2 is the cyclopentadienyl anion;

R^3 is naphthalene, phenanthrene, anthracene or pyrene, unsubstituted or substituted with methyl or methoxy; and

$(LF_m)^-$ is SbF_6^-, BF_4^-, AsF_6^-, or PF_6^-;

to react with a compound R^1 at a temperature of at least 60° C. without addition of a Lewis acid to produce a second complex of the formula

$$[R^1R^2Fe^{II}]^+(LF_m)^-$$

in which R^2 and $(LF_m)^-$ are as defined for said first complex and R^1 is a ligand-forming cyclic compound different from R^3 and selected from the group consisting of benzene, toluene, xylene, methoxybenzene, naphthalene, methoxynaphthalene, methylnaphthalene, biphenyl, indan, hydroxyindan, methoxyindan, indene, stilbene, thiophene, furan, and benzothiophene.

3. The process which comprises heating a first complex of the formula:

$$[R^3(R^2Fe^{II})_a]_b{}^{+a}(LF_m)^{-b}$$

wherein

R^2 is a cyclopentadienyl or an indenyl anion;

R^3 is a hydrocarbon containing at least two condensed aromatic rings and from 10 to 24 ring carbon atoms, said hydrocarbon being unsubstituted or substituted with one or more substituents independently selected from the group consisting of alkyl of 1 to 8 carbon atoms, alkoxy of 1 to 8 carbon atoms, alkylthio of up to 8 carbon atoms, hydroxyalkyl of up to 8 carbon atoms, alkenyl of up to 8 carbon atoms, or alkyl of up to 3 carbon atoms substituted with carbalkoxy of up to 8 carbon atoms in the alkoxy group;

L is a divalent to heptavalent metal or non metal selected from the group consisting of antimony, boron, phosphorous, arsenic, iron, tin, bismuth, aluminum, gallium, indium, titantium, zirconium, scandium, vanadium, chromium, manganese, and copper;

a has a value of 1 or 2;
b has a value of 1, 2, or 3; and
m is the sum of b plus the valency of L;
with a compound R^1 at a temperature of at least 60° C. without addition of a Lewis acid to produce a second complex of the formula:

$$[R^1(R^2Fe^{II})_a]_b{}^{+a}(LF_m)^{-b}$$

in which
R^2, L, a, b, and m are as defined for said first complex; and
R^1 is a ligand-forming cyclic compound different from R^3 and in which the cyclic structure is selected from the group consisting of
(i) an aromatic hydrocarbon ring system of 6 to 24 ring carbon atoms;
(ii) a nitrogen containing ring system selected from the group consisting of pyrrole and indole; and
(iii) a heteroaromatic ring system containing 4 to 20 ring carbon atoms and at least one hetero ring atom selected from the group consisting of oxygen and sulfur,
said aromatic and heteroaromatic ring systems being monocyclic, fused, or linked through a carbon-carbon bond or a linking member selected from the group consisting of alkylene of 1 to 4 carbon atoms, alkylidene of 2 to 8 carbon atoms, cycloalkylene of 5 to 8 carbon atoms, —CO—, —SO—, —SO_2— and —SiR_2— where R is phenyl, alkyl of 1 to 4 carbon atoms, or alkenyl of 2 to 6 carbon atoms; and said cyclic structure being
(a) unsubstituted,
(b) substituted on one or more ring carbon atoms with substituents selected from the group consisting of hydroxy, alkyl of 1 to 8 carbon atoms, alkoxy of 1 to 8 carbon atoms, alkylthio of up to 8 carbon atoms, hydroxyalkyl of up to 8 carbon atoms, alkenyl of up to 8 carbon atoms, or alkyl of up to 3 carbon atoms substituted with carbalkoxy of up to 8 carbon atoms in the alkoxy group, or
(c) bridged between two vicinal ring carbon atoms with alkylene of 2 to 6 carbon atoms, one carbon atom of which alkylene may be replaced with oxygen or sulfur.

5,082,953

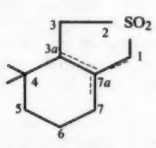
SULPHOLENES AND PROCESSES FOR THEIR PREPARATION AND USE

Jean-Pierre Duchesne, Lyons, France, assignor to Rhone Poulenc Nutrition Animale, Commentry, France

Filed Mar. 4, 1991, Ser. No. 663,129
Claims priority, application France, Mar. 5, 1990, 90 02724
Int. Cl.[5] C07D *333/66, 333/64*
U.S. Cl. 549—53 **2 Claims**

1. A sulpholene comprising:
4,4-dimethyl-2,2-dioxohexahydrobenzo[c]thiophene of formula (I):

Formula (I)



wherein a double bond is located in the 3a–7a, 1–7a or 7a–7 position.

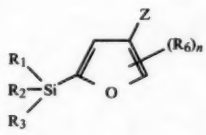
5,082,954

INTERMEDIATES AND PROCESSES FOR PREPARING 4-SUBSTITUTED 2-5(H)-FURANONES AS ANTI-INFLAMMATORY AGENTS

Gary C. M. Lee, Laguna Hills, and Michael E. Garst, Newport Beach, both of Calif., assignors to Allergan, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 493,895, Mar. 15, 1990, and a continuation-in-part of Ser. No. 510,368, Apr. 17, 1990, Pat. No. 5,037,811, and a continuation-in-part of Ser. No. 192,808, May 11, 1988, which is a continuation-in-part of Ser. No. 59,282, Jun. 8, 1987, abandoned, and a continuation-in-part of Ser. No. 510,367, Apr. 17, 1990, and a continuation-in-part of Ser. No. 427,268, Oct. 25, 1989, which is a continuation-in-part of Ser. No. 273,300, Nov. 18, 1988, abandoned, and a continuation-in-part of Ser. No. 501,637, Oct. 25, 1989, which is a continuation-in-part of Ser. No. 281,154, Dec. 7, 1988, abandoned, and a continuation-in-part of Ser. No. 426,243, Oct. 25, 1989, which is a continuation-in-part of Ser. No. 273,294, Nov. 18, 1988, abandoned. This application Apr. 24, 1991, Ser. No. 690,444
Int. Cl.[5] C07D *307/60*
U.S. Cl. 549—214 **10 Claims**

1. A compound of the formula



where
Z is CH═O or CH_2OH
R_1, R_2 and R_3 independently are n-alkyl of 1 to 6 carbons, or branched chain alkyl of 1 to 6 carbons;
R_6 is phenyl, or alkyl of 1 to 6 carbons, and
n is 1 or 2.

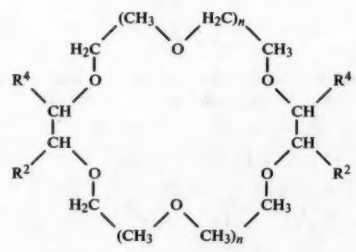
5,082,955

METHOD OF SEPARATING ISOMERS OF A CROWN ETHER COMPOUND TO RECOVER CIS-SYN-CIS ISOMER FROM DICYCLOHEXYL 18-CROWN 6.

Marc Lemaire, Villeurbanne; Alain Guy, Pontcarre; Jacques Foos, Orsay; Vincent Guyon, Paris, and Rodolphe Chomel, Orange, all of France, assignors to Cogema-Compagnie Generale Des Matieres Nuclearires, Villacoublay, France

Filed Dec. 11, 1990, Ser. No. 625,552
Claims priority, application France, Dec. 15, 1989, 89 16637
Int. Cl.[5] C07D *323/00*
U.S. Cl. 549—349 **9 Claims**

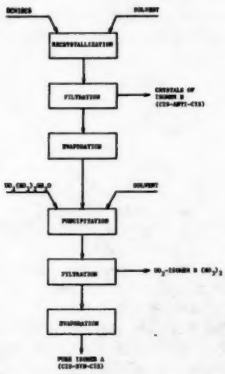
1. Method for separating isomers of a crown ether compound having the formula



in which n=0 or is a whole number ranging from 1 to 3, R_1 and R_2, which are identical or different, represent an alkyl, alkoxyalkyl or poly(alkoxyalkyl) radical or R_1 and R_2 collectively form a cycloalkyl radical, wherein in includes the following successive stages:

a) dissolving in an organic solvent a mixture of the isomers of said crown compound including the cis-anti-cis isomer and the cis-syn-cis isomer,

b) adding uranyl nitrate to the solution obtained in stage a) in sufficient quantities so that virtually all the isomers, except



the cis-syn-cis isomer, of the crown compound are precipitated in the form of complexes along with the uranyl nitrate,

c) separating the formed precipitate, and

d) recovering the remaining pure cis-syn-cis isomer from the solution.

5,082,956

ISOMERIZATION OF EPOXYALKENES TO 2,5-DIHYDROFURANS

John R. Monnier; Stephen A. Godleski, both of Fairport; Howard M. Low, Rochester; Laughlin G. McCullough, Fairport; Lynda W. McGarry, North Chili, all of N.Y., and Gerald W. Phillips, Longview, Tex., assignors to Eastman Kodak COmpany, Rochester, N.Y.

Continuation-in-part of Ser. No. 490,208, Mar. 8, 1990, abandoned. This application Dec. 14, 1990, Ser. No. 627,668

Int. Cl.[5] C07D *307/28*

U.S. Cl. 549—507 **33 Claims**

1. Process for the isomerization of a γ,δ-epoxyalkene or a γ,δ-epoxycycloalkene to the corresponding 2,5-dihydrofuran which comprises contacting a γ,δ-epoxyalkene or a γ,δ-epoxycycloalkene in the gas phase with a catalytic amount of a quaternary organic onium compound containing at least 6 carbon atoms.

5,082,957

PREPARATION OF 1-AMINO-2-BROMO-4-HYDROXYANTHRAQUINONE

Gerhard Epple, Weisenheim, Fed. Rep. of Germany, assignor to Basf Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

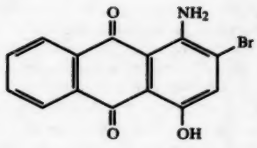
Filed Nov. 17, 1989, Ser. No. 437,660

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1988, 3841988

Int. Cl.[5] C07C *97/24*

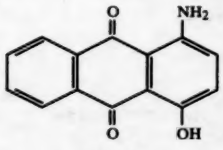
U.S. Cl. 552—244 **3 Claims**

1. A process for preparing 1-amino-2-bromo-4-hydroxyanthraquinone (I)



(I)

by brominating 1-amino-4-hydroxyanthraquinone (II)



II

at a temperature of from 100–180° C. in a solvent consisting essentially of an inert aprotic organic liquid.

5,082,958

NOVEL SYNTHESIS OF DIFUNCTIONAL HALO ORGANO NONCARBON GROUP IV MAIN GROUP ELEMENT AMIDES

Antony P. Wright, Rhodes, and Padmakumari J. Varaprath, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 22, 1990, Ser. No. 467,868

Int. Cl.[5] C07F *7/10, 7/22, 7/24, 7/30*

U.S. Cl. 556—413 **22 Claims**

1. A method for preparing a difunctional halo noncarbon Group IV main group element amide comprising: cleaving a noncarbon Group IV main group element-nitrogen bond in a heterocyclic ring with a reactive halide moiety.

5,082,959

PROCESS FOR PREPARING SILYLATED AROMATIC ACIDS

Andreas B. Ernst, Glen Ellyn; Howard B. Yokelson, Aurora, and Robert K. Gipe, Wheaton, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Sep. 6, 1990, Ser. No. 578,892

The portion of the term of this patent subsequent to Jul. 10, 2007, has been disclaimed.

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—438 **12 Claims**

1. A process for preparation of silicon-containing aromatic polyacids by liquid phase oxidation of a mono- or poly(mono- or polyalkyl-, aryl-, oxo-, siloxy, or silyl-substituted) silyl-substituted mono- or polyalkyl-substituted aryl compound comprising an alkyl-substituted or aryl substituted aryl mono- or polyalkyl silyl wherein alkyl groups or aryl groups in the alkyl-substituted or aryl-substituted mono- or polyalkyl silyl contain from 1 to 100 carbon atoms, the number of alkyl groups on the alkyl-substituted aryl mono- or polyalkyl silyl are from 1 to 4, the number of aryl groups in the aryl-substituted aryl-, mono- or polyalkyl silyl are from 1 to 4 and the alkyl groups in the silicon atom contain from 1 to 20 carbon atoms, which process comprises:

a) introducing into a suitable reactor a silyl compound feedstock comprising said mono- or poly(mono- or polyalkyl-, aryl-, oxo-, siloxy, or silyl-substituted) silyl- substituted mono- or polyalkyl-substituted aryl compound in a solvent acid comprising an aliphatic C_2 to C_6 monocarboxylic acid;

b) oxidizing said feedstock in the presence of a catalyst comprising cobalt-manganese-bromine with an oxygen-containing gas wherein the weight ratio of cobalt (calculated as elemental cobalt) to the said silyl compound is in

the range of from about 0.2 to about 100 milligram atoms (mga) per gram mole of said silyl compound feedstock weight ratio of manganese (calculated as elemental manganese) to the cobalt of said catalyst is in the range of from about 0.2 to 100 milligram atoms (mga) per mga of cobalt, and weight ratio of bromine in said catalyst (calculated as elemental bromine) to total cobalt and manganese (calculated as elemental cobalt and manganese) is in the range of from about 0.25 to about 1.2 mga per mga of total cobalt and manganese, wherein weight ratio of said silyl compound feedstock to said aliphatic C_2 to C_6 monocarboxylic acid is from about 1:5 to about 1:10, said silyl compound feedstock to said acid, at a temperature within the range of from about 120° C. (250° F.) to about 260° C. (500° F.) and at a reaction pressure within the range of from about 50 psig to about 750 psig; and

c) recovering a silicon-containing aromatic polyacid wherein said polyacid comprises a silicon-containing aromatic polyacid.

5,082,960

CONJUGATED DIACETYLENE BOND-CONTAINING SILICON COMPOUND AND METHOD FOR PRODUCING SAME

Toshinobu Ishihara; Tohru Kubota; Mikio Endo, all of Joetsu, Japan, and Katsuyuki Oikawa, Phoenix, Ariz., assignors to Shin-Etsu Chemical Co., Ltd., Japan

Filed Feb. 5, 1991, Ser. No. 649,870

Claims priority, application Japan, Feb. 5, 1990, 2-25852

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—444 **13 Claims**

1. A conjugated diacetylene bond-containing silicon compound represented by the following formula (I):

$$A(CH_2)_mC{\equiv}CC{\equiv}C(CH_2)_nO(CH_2)_3SiX^1X^2X^3 \quad (I)$$

wherein A represents a hydrogen atom, a vinyl group or a dimethylsilyl group X^1, X^2 and X^3 may be the same or different and each represents a halogen atom or an alkoxy group having 1 to 4 carbon atoms; and m and n each represents an integer ranging from 1 to 15.

5,082,961

METHOD FOR THE PREPARATION OF AN ALKYNYL COMPOUND

Takehiko Fukumoto, and Akira Yamamoto, both of Niigata, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1990, Ser. No. 580,789

Claims priority, application Japan, Sep. 19, 1989, 1-243021

Int. Cl.[5] C07F *7/08*; C07C *2/02*

U.S. Cl. 556—466 **4 Claims**

1. A method for the preparation of a long-chain alkynyl compound which comprises the steps of:

(a) subjecting an ω-halogeno1-alkynyl magnesium halide compound represented by the general formula

$$X^1MgC{\equiv}C(CH_2)_nX^2,$$

in which X^1 is a halogen atom, X^2 is an atom of bromine or iodine and the subscript n is an integer in the range from 3 to 10, and an unsubstituted or substituted Grignard reagent represented by the general formula

$$RMgX^1,$$

in which X^1 has the same meaning as defined above and R is a group selected from the class consisting of alkyl groups, alkenyl groups, alkynyl groups, alkapolyenyl groups, aryl groups and hydrocarbon groups having a protected hydroxy group, to a Grignard-coupling reaction to give an intermediate compound represented by the general formula

$$X^1MgC{\equiv}C(CH_2)_nR,$$

in which each symbol has the same meaning as defined above;

(b) subjecting the intermediate compound to a reaction with a reactant selected from the class consisting of C_2-synthons, C_1-synthons and chlorosilane compounds having reactivity with the intermediate compound at the X^1Mg-terminal; and

(c) hydrolyzing the reaction product obtained in step (b).

5,082,962

STERICALLY HINDERED AMINOHYDROCARBYLSILANES AND PROCESS OF PREPARATION

Curtis L. Schilling, Jr., Croton-on-Hudson, N.Y., assignor to Union Carbide Chemicals and Plastics Technology Corporation, Danbury, Conn.

Division of Ser. No. 529,400, May 29, 1990, Pat. No. 5,030,746. This application Feb. 6, 1991, Ser. No. 651,557

Int. Cl.[5] C07F *7/04, 7/08*

U.S. Cl. 556—479 **9 Claims**

1. A process for preparing the sterically hindered aminohydrocarbylsilane of the formula

$$X_3SiRCR'_2NR''_2$$

wherein

R is a linear or branched saturated or unsaturated divalent hydrocarbon group having 2 to 12 carbon atoms;

R′ is an alkyl group having 1 to 8 carbon atoms or an aryl group having 6 to 12 carbon atoms;

R″ is a hydrogen, an alkyl group having 1 to 8 carbon atoms, an aryl group having 6 to 12 carbon atoms, or $—SiX'_3$ wherein X′ is an alkyl group having 1 to 3 carbon atoms; and

X is an alkyl group having 1 to 8 carbon atoms, an aryl group having 6 to 12 carbon atoms, and alkoxy group having 1 to 8 carbon atoms, an aryloxy group having 6 to 12 carbon atoms or a halogen atom, and

wherein each X, X′, R′ and R″ is the same or different comprising:

reacting a silane having the formula

$$X_3SiH$$

wherein X is an alkyl group having 1 to 8 carbon atoms, an aryl group having 6 to 12 carbon atoms, an alkoxy group having 1 to 8 carbon atoms, an aryloxy group having 6 to 12 carbon atoms, or a halogen atom with the proviso that the halosilane be unreactive with the sterically hindered amine group, and wherein each X is the same of different;

with a sterically hindered unsaturated amine having the formula

$$R'''CR'_2NR''_2$$

wherein R′ is hydrogen, an alkyl group having 1 to 8 carbon atoms or an aryl group having 6 to 12 carbon atoms;

R″ is hydrogen, an alkyl group having 1 to 8 carbon atoms, an aryl group having 6 to 12 carbon atoms, or $—SiX'_3$ wherein X′ is an alkyl group having 1 to 3 carbon atoms; and

R‴ is an acetylenic ($—C{\equiv}CR''$) or vinylic ($—CH{=}CH_2$) group, in the presence of a noble metal catalyst at an elevated temperature.

5,082,963

PROCESS FOR THE REGIOSPECIFIC SULFONATION OF SULFONYL SUBSTITUTED 2-AMINONAPHTHALENES AND FIBER REACTIVE AZO DYES MADE FROM THE PRODUCTS OF SAID PROCESS

Thomas S. Phillips, West Warwick, R.I., and Anthony J. Corso, Bad Sodena.Tn, Fed. Rep. of Germany, assignors to Hoechst Celanese Corporation, Somerville, N.J.

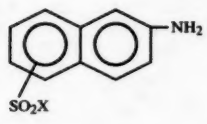
Filed Nov. 24, 1986, Ser. No. 934,053

Int. Cl.[5] C07C *305/12, 313/16*

U.S. Cl. 558—33 12 Claims

1. A method for the preparation of a sulfonic acid isomer of a sulfonyl substituted 2-aminonaphthalene which comprises:

(a) reacting a sulfonyl substituted 2-aminonaphthalene of the formula:



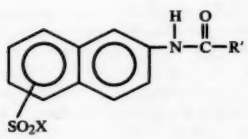
(1)

wherein

X represents the group —CH_2—CH_2—Z wherein Z represents an inorganic or organic substituent selected from halogen, hydroxy, acyloxy, wherein the term acyl is R'CO and R' is defined below dialkylamino, thiosulfato, phosphato, or sulfato, wherein the group —SO_2X is located at the 5, or 6, or 7, or 8 ring position;

with an anhydride of the formula R'CO—O—CO—R' or an acid chloride of the formula R'COCl wherein R' is selected from unsubstituted and substituted lower alkyl of 1 to 4 carbons and unsubstituted or substituted phenyl wherein said substituents are selected from halo, nitro, lower alkoxy, phenoxy, lower alkyl or mixtures thereof;

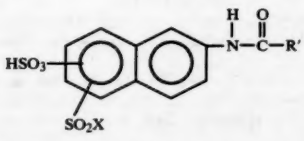
to form a sufonyl substituted N-2-acylaminonaphthalene of the formula:



(2)

wherein R' and X are defined above;

(b) sulfonating said sulfonyl substituted N-2-acylaminonaphthalene at a temperature between 0°–50° C. whereby one positional isomeric sulfonation product in formed having the formula:



(3)

wherein the groups —SO_2X and HSO_3—, respectively have one of the following ring positional configurations: 5-7, 6-8, 7-5, or 8-6 and wherein R' and X are defined above.

5,082,964

SELECTIVE ACETYLCHOLINESTERASE INHIBITORS AND METHODS OF MAKING AND USING SAME

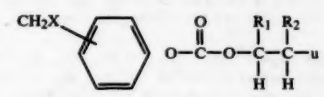
Ned D. Heindel, Easton, Pa.; Miguel Turizo, Medellin, Colombia; Hugh D. Burns, Bel Air, and Venkataraman Balasubramanian, Baltimore, both of Md., assignors to Lehigh University, Bethlehem, Pa.

Continuation-in-part of Ser. No. 575,759, Feb. 1, 1984, abandoned. This application Jun. 10, 1986, Ser. No. 872,677

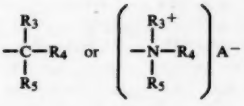
Int. Cl.[5] C07C *69/96*

U.S. Cl. 558—270 20 Claims

1. A chemical compound having the formula:



where X=halide or a secondary or tertiary amine; u is



R_1, R_2, R_3, R_4 and R_5=any one or more members of the group consisting of hydrogen and alkyl groups of up to 5 carbon atoms and A=one more members of the group consisting of iodide, bromide, chloride, acetate and alkylsulfate; said compound having acetylcholinesterase inhibitory activity.

5,082,965

PROCESS FOR PREPARATION OF ALKOXYCARBONYLOXYSTYRENE

Allan E. Nader, and Thaliyil V. Rajanbabu, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 29, 1990, Ser. No. 604,985

Int. Cl.[5] C07C *69/96*

U.S. Cl. 558—270 15 Claims

1. A process for the preparation of alkoxycarbonyloxystyrene comprising:

a) reacting acyloxystyrene with a strong base to yield the corresponding phenolate;

b) adding to said phenolate reaction a phase transfer catalyst and an alkoxycarbonylation agent in an organic solvent to yield alkoxycarbonyloxystyrene in the organic phase; and

c) separating the organic phase and isolating the desired alkoxycarbonyloxystyrene.

5,082,966

SULPHINYL COMPOUNDS AND THEIR PREPARATION

Frank S. Moffatt, Reading, England, assignor to Imperial Chemical Industries plc, England

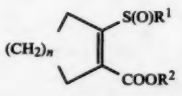
Filed Sep. 13, 1990, Ser. No. 582,307

Claims priority, application United Kingdom, Sep. 20, 1989, 8921221

Int. Cl.[5] C07C *317/20, 315/02, 231/02, 233/10*

U.S. Cl. 560—11 16 Claims

1. A sulphinyl cycloalkene carboxylate of the formula I



wherein

R^1 is an aralkyl group containing from 7 to 15 carbon atoms

attached to the sulphur atom through an alkyl carbon atom or an aralkyl group containing from 7 to 15 carbon atoms which is substituted by halogen, halohydrocarbyl, nitro, hydrocarbyloxy or hydrocarbylthio;

R^2 is hydrogen or an alkyl, aryl or aralkyl group containing up to 20 carbon atoms; and

n is one or two.

5,082,967

NOVEL FATTY ACID ANALOG ENZYME SUBSTRATES

Robert O. Heuckeroth, St. Louis; Steven P. Adams, St. Charles; Jeffrey I. Gordon, St. Louis, all of Mo., and George W. Gokel, Miami, Fla., assignors to Washington University, St. Louis, Mo.

Continuation-in-part of Ser. No. 208,192, Jun. 16, 1988, and a continuation-in-part of Ser. No. 402,094, Sep. 1, 1989. This application Feb. 9, 1990, Ser. No. 478,298

Int. Cl.[5] C08H *3/00;* **C07C** *321/00, 315/00*

U.S. Cl. 562—512 **14 Claims**

1. A diheteroatom-substituted fatty acid analog compound having activity as a substrate for myristoylating enzymes selected from the group consisting of C_{13} or C_{14} fatty acids or alkyl esters thereof in which two methylene groups normally in carbon positions from 3 to 13 are replaced by oxygen and/or sulfur and in which said oxygen or sulfur atoms are separated by at least one methylene group.

5,082,968

METHOD OF PREPARING HEXAALKYLGUANIDINIUM SALTS

Daniel J. Brunelle, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1990, Ser. No. 609,321

Int. Cl.[5] C07C *277/08*

U.S. Cl. 564—240 **10 Claims**

1. A method of preparing a hexaalkylguanidinium salt comprising contacting a 1,1,3,3-tetraalkylguanidine free from benzylic carbon atoms, in a single step reaction, with an alkylating agent in the presence of at least one alkaline reagent selected from the group consisting of alkali and alkaline earth metal oxides, hydroxides and carbonates and a promoting amount of a phase transfer catalyst selected from the group consisting of quaternary ammonium salts, quaternary phosphonium salts and crown ethers, under reaction conditions such that the hexaalkylguanidinium salt is produced in a higher yield as compared with the same method excluding the phase transfer catalyst.

5,082,969

INDUSTRIAL PROCESS FOR OBTAINING AN ARYLOXYPROPANOLAMINE

Josep M. Ribalta Baro, Esplugues de Llobregat; Gloria Oranias Olsina, and Julio Campon Pardo, both of Barcelona, all of Spain, assignors to Esteve Quimica, S.A., Barcelona, Spain

Filed May 16, 1990, Ser. No. 525,410

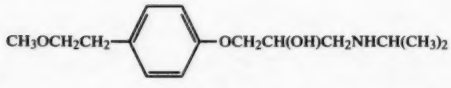
Claims priority, application Spain, May 26, 1989, 89 01774

Int. Cl.[5] C07C *209/14*

U.S. Cl. 564—349 **3 Claims**

1. Industrial process for obtaining an aryloxypropanolamine of chemical name 1-[4-(2-methoxyethyl)-phenoxy]-3-[(1-methylethyl)amino]-2-propanol of Formula I:

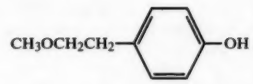
I



comprising:

1) reacting 4-(2-methoxyethyl)phenol of Formula III

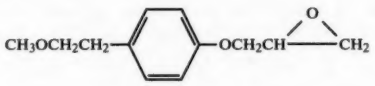
III



with epichlorohydrin in an alkaline aqueous medium at temperatures of between 0° and 25° C.;

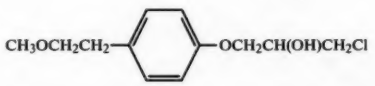
2)obtaining a crude reaction product composed of 75–80% of 3-[4-(2-methoxyethyl)phenoxy]-1,2-epoxypropane of Formula II:

II



and 15–20% of 1-[4-(2-methoxyethyl)-phenoxy-3-chloro-2-propanol of Formula IV:

IV



3) extracting and washing the reaction products of Step 2 and;

4) reacting either the compound of formula II or the compound of formula IV or a mixture thereof with isopropylamine in an aqueous medium at temperatures ranging between 0° and 30° C. to obtain the desired aryloxypropanolamine of Formula I.

5,082,970

PROCESS FOR RECYCLING AMINE ISOMER

Tamim F. Braish, Ledyard, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Mar. 6, 1991, Ser. No. 665,506

Int. Cl.[5] C07C *209/88*

U.S. Cl. 564—424 **23 Claims**

1. A process for converting trans-isomeric N-methyl-4-(3,4-dichlorophenyl)-1,2,3,4-tetrahydro-1-naphthaleneamine to cis-isomeric N-methyl-4-(3,4-dichlorophenyl)-1,2,3,4-tetrahydro-1-naphthaleneamine, which comprises contacting trans-isomeric N-methyl-4-(3,4-dichlorophenyl)-1,2,3,4-tetrahydro-1-naphthaleneamine in the absence or presence of up to about an equal part by weight of the corresponding cis-isomer with a basic equilibration agent in a reaction-inert polar organic solvent system at a temperature that is in the range of from about 55° C. up to about 125° C. until the amount of the desired cis-amine in the resultant cis/trans-mixture achieves a constant value of about 2:1 on a weight-by-weight basis.

5,082,971

TRIFLUOROMETHYLAMINOBENZENES CONTAINING FLUORINE AND/OR CHLORINE AND THEIR PREPARATION

Albrecht Marhold, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 261,795, Oct. 24, 1988, abandoned. This application Mar. 1, 1990, Ser. No. 487,339

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1987, 3737986

Int. Cl.[5] C07C *211/47, 211/46*

U.S. Cl. 564—442 **4 Claims**

1. A trifluoromethylaminobenzene containing at least one fluorine situated on the benzene ring wherein the trifluoromethyl group is situated in the 1-position and the amino group

a) is situated in the 2-position and a fluorine atoms is situated in the 6-position or two fluorine atoms are situated in the 5- and 6-positions or a fluorine atom is situated in the 5-position and a chlorine atom is situated in the 6-position or

b) is situated in the 3-position and a fluorine atom is situated in the 2- and 6-positions or a chlorine atom is situated in the 2-position and a fluorine atom is situated in the 6-position or

c) is situated in the 4-position and a fluorine atom is situated in the 2-position and additionally a further fluorine atom is situated in the 3- or 6-position or two further fluorine atoms are situated in the 5- and 6-positions or a further fluorine atom is situated in the 6-position and two chlorine atoms are situated in the 3- and 5-positions or a chlorine atom is situated in the 3-position or two chlorine atoms are situated in the 3- and 5-positions or

d) is situated in the 4-position and two fluorine atoms are situated in the 3- and 5-positions or a fluorine atom is situated in the 3-position and a chlorine atom is situated in the 5-position or

e) is situated in the 2-, 3- or 4-position and three fluorine atoms are situated on the aromatic ring.

5,082,972

PROCESS FOR PREPARATION OF ACYCLIC ETHYLENEAMINES

Tadashi Komiyama; Hisaharu Kuboyama; Takashi Jimbo; Hiroyoshi Watanabe; Shuichi Tokumoto; Yumiko Endoh; Eiichi Sugiyama, and Yoshitaro Naganuma, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jul. 11, 1990, Ser. No. 551,086

Claims priority, application Japan, Jul. 17, 1989, 1-182466; Jul. 18, 1989, 1-183590; Jul. 25, 1989, 1-190470; Jul. 25, 1989, 1-190472

Int. Cl.[5] C07C *209/68*

U.S. Cl. 564—480 **2 Claims**

1. A process for the preparation of acyclic ethyleneamines which comprises reacting at least one of ammonia and ethylenediamine with monoethanolamine at 150°–400° C. at 1–1000 kg/cm^2 in the presence of a fixed bed catalyst containing at least one compound selected from the group consisting of phosphoric acid, pyrophosphoric acid, triphosphoric acid, polyphosphoric acid, ammonium phosphate, ammonium pyrophosphate and ammonium triphosphate, and metallic salts of phosphoric acid, pyrosphosphoric acid, triphosphoric acid and polyphosphoric acid, wherein 1–50 moles of ammonia and 0.1–10 moles of ethylenediamine are used per mole of monoethanolamine, while 1–1000 ppm (by weight) of a phosphorus-containing material in terms of phosphorus per monoethanolamine is supplied to said catalyst bed.

5,082,973

PROCESS FOR THE PREPARATION OF BIS(4-CHLOROPHENYL) SULFONE

Michael Stumpp, Deidesheim; Peter Neumann, Mannheim, and Heinz Eilingsfeld, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 12, 1990, Ser. No. 464,208

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1989, 3902890

Int. Cl.[5] C07C *315/00*

U.S. Cl. 568—34 **10 Claims**

1. A process for the preparation of bis (4-chlorophenyl) sulfone which comprises:

simultaneously introducing and reacting in a single stage the reactants

(a) sulfur trioxide,

(b) dimethyl sulfate and

(c) chlorobenzene

in a molar ratio of (a):(b):(c) of from 0.1:0.005:1 to 2:1:1 and at a temperature of from 50° to 100° C.

5,082,974

3-HALOGENO-2,3-DIPHENYLACRYLALDEHYDE DERIVATIVES, PROCESS FOR PREPARING THE SAME AND A PHARMACEUTICAL COMPOSITION FOR TREATING HYPERLIPIDEMI

Kinji Hashimoto; Makoto Inoue, and Junichi Minamikawa, all of Naruto, Japan, assignors to Otsuka Pharaceutical Factory, Inc., Naruto, Japan

PCT No. PCT/JP90/00526, § 371 Date Dec. 10, 1990, § 102(e) Date Dec. 10, 1990, PCT Pub. No. WO90/12786, PCT Pub. Date Nov. 1, 1990

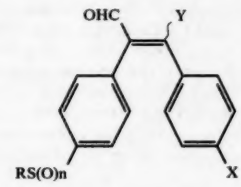
PCT Filed Apr. 23, 1990, Ser. No. 623,404

Claims priority, application Japan, Apr. 24, 1989, 1-103981

Int. Cl.[5] C07C *317/14, 317/22*

U.S. Cl. 568—41 **5 Claims**

1. A 3-halogeno-2,3-diphenylacrylaldehyde derivative represented by the formula



wherein R is an alkyl group having 1 to 6 carbon atoms, X and Y each represent a halogen atom, and n is 0, 1 or 2.

5,082,975

SYNTHESIS OF HEXAHYDROLUPULONE, NOVEL FORMS THEREOF, AND ITS USE AS A SELECTIVE INHIBITOR OF CELL GROWTH AND MULTIPLICATION

Paul H. Todd, Jr., and James A. Guzinski, both of Kalamazoo, Mich., assignors to Kalamazoo Holdings, Inc., Kalamazoo, Mich.

Continuation-in-part of Ser. No. 232,289, Aug. 15, 1988, Pat. No. 4,918,240. This application Feb. 26, 1990, Ser. No. 485,996

Int. Cl.[5] C07C *45/62*

U.S. Cl. 568—315 **7 Claims**

1. A process for producing hexahydrolupulone which comprises the steps of contacting beta acids in an alkaline solution with a metal oxide, hydroxide, or salt which produces polyvalent metal ions, other than platinum or palladium, optionally in the presence of a water-immiscible solvent, separating the thus-purified beta acid alkaline solution from catalyst poisons present as solids or dissolved in the optional solvent, hydrogenating the purified beta acids at a pH above 4 with hydrogen using a platinum or palladium catalyst until uptake of three moles of hydrogen per mole of starting beta acids, and recovering hexahydrolupulone from the hydrogenation medium.

5,082,976

PROCESS FOR THE PREPARATION OF BENZALDEHYDES

Heinz U. Blank, Odenthal, and Helmut Kraus, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 25, 1990, Ser. No. 603,110

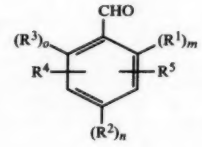
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1989, 3939759

Int. Cl.[5] C07C *45/32, 45/36*

U.S. Cl. 568—431 **17 Claims**

1. Process for the preparation of a benzaldehyde which

carried an electron-withdrawing substituent in at least one of the ortho- and para-positions, of the formula



in which

R^1, R^2 and R^3 independently of one another denote nitro, cyano, $COOR^6$, $SO_2—OR^5$ or $SO_2—R^5$,

represents hydrogen, straight-chain or branched C_1–C_8-alkyl, straight-chain or branched C_1–C_8-alkoxy, phenyl, benzyl, cyclopentyl, cyclohexyl, fluorine, chlorine, bromine or $—N(R^6,R^7)$,

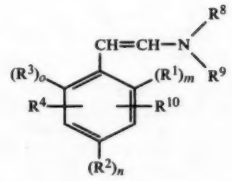
denotes hydrogen or the aldehyde group —CHO,

where

R^6 and R^7 independently of one another denote straight-chain or branched C_1–C_4-alkyl, benzyl or phenyl,

where, furthermore, the cyclic substituents mentioned may in turn be substituted once or twice by methyl, ethyl, methoxy, ethoxy, fluorine, chlorine or bromine and m, n and o independently of one another can assume the value zero or one, but the sum m+n+o is limited to the value one or two,

wherein a substituted β-amino-styrene of the formula



in which

R^1, R^2, R^3, R^4, m, n and o have the meaning mentioned,

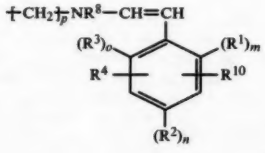
R^8 and R^9 independently of one another denote straight-chain or branched C_1–C_8-alkyl, C_5–C_7-cycloalkyl, straight-chain or branched C_2–C_8-alkenyl, straight-chain or branched C_2–C_8-alkoxyalkyl, straight-chain or branched C_3–C_8-alkoxyalkenyl, C_6–C_{12}-aryl, C_7–C_{10}-aralkyl or a 5- to 8-membered saturated or unsaturated heterocyclic ring whose heteroatoms are one or two of the group comprising N, O and S,

where furthermore

R^8 and R^9, together with the N atom which they substitute, form a 5- to 8-membered saturated or unsaturated, non-aromatic N-heterocyclic ring which contain a further heteroatom from the group comprising N, O or S, and

R^8 additionally denotes hydrogen,

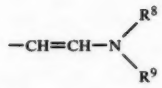
R^9 additionally denotes the group



in which

p assumes the value 2, 3 or 4, and

R^{10} denotes hydrogen or the group



or a mixture of several of such β-amino-styrenes which differ

is reacted with oxygen in the presence of an anhydrous copper salt in the solution of an aprotic, polar solvent selected from the group comprising dimethylformamide (DMF), dimethylacetamide, diethylformamide, diethylacetamide, hexamethylphosphoramide, acetone, methyl ethyl ketone, methyl tert.-butyl ketone, dimethyl sulphoxide, acetonitrile, propionitrile, N-methylpyrrolidone (NMP), N-methyl-caprolactam (NMC) and N,N-dimethyl-imidazolidinone (DMI), at 0°–120° C.

5,082,977

ALDEHYDES BY OLEFIN HYDROFORMYLATION

Steven S. C. Chaung, Akron, Ohio, assignor to University of Akron, Akron, Ohio

Continuation of Ser. No. 480,642, Feb. 15, 1990, abandoned. This application Jan. 31, 1991, Ser. No. 649,377

Int. Cl.[5] C07C *45/50*

U.S. Cl. 568—454 **18 Claims**

1. A process for producing aldehydes having at least three carbon atoms and less than eight carbon atoms, by the reaction of an olefin or a mixture of olefins, said olefin or mixture thereof having at least two carbon atoms and less than seven carbon atoms, with carbon monoxide and hydrogen over a solid phase catalyst, at a temperature from about 70° C. to about 350° C. and at a pressure from about 1 to about 100 atmospheres, said catalyst being essentially of the formula:

$$A_xMS_yMn_z$$

where

A is an alkali metal or mixture of alkali metals;

M is a Group VIII metal or mixture of Group VIII metals;

S is sulfur;

Mn is manganese;

x and z are in the range of 0 to 10; and

y is in the range from 0.01 to 2.

5,082,978

SELECTIVE MONOMETHYLATION OF PHENOLIC COMPOUNDS

Michel Gubelmann, Lyon, and Christian Allandrieu, Villeurbanne, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

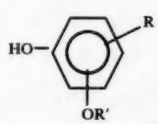
Continuation of Ser. No. 390,069, Aug. 7, 1989, abandoned. This application May 9, 1991, Ser. No. 701,347

Claims priority, application France, Aug. 5, 1988, 88 10812

Int. Cl.[5] C07C *41/00*

U.S. Cl. 568—637 **12 Claims**

1. A process for the monomethylation of a phenolic compound, comprising reacting as the sole alkylation agent para-dimethoxybenzene with a phenol of the formula:



(I)

in which R is H, OH, alkyl, alkoxy, halogen, phenyl, alkyl-substituted phenyl, or CF_3, and R′ is H, alkyl, C_6H_4OH or C_6H_4O-alkyl, in the presence of a catalytically effective amount of an acid catalyst.

5,082,979

CYMENOL PREPARATION BY DIRECT DEHYDROGENATION

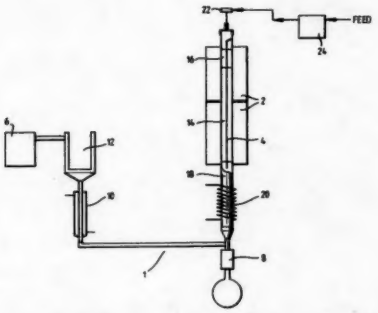
Christopher P. Newman, Canterbury, Great Britain, assignor to Unilever Patent Holdings B.V., Rotterdam, Netherlands

Filed Sep. 6, 1990, Ser. No. 578,496

Claims priority, application United Kingdom, Sep. 6, 1989, 8920110; Nov. 30, 1989, 8927072

Int. Cl.[5] C07C *37/06*

U.S. Cl. 568—782 15 Claims



1. A process for the conversion of an 8-hydroxymenthene to an 8-hydroxycymene which comprises treating the 8-hydroxymenthene in the vapour phase with a dehydrogenation catalyst, wherein the conversion is carried out at a temperature of from 80° to 150° C.

5,082,980

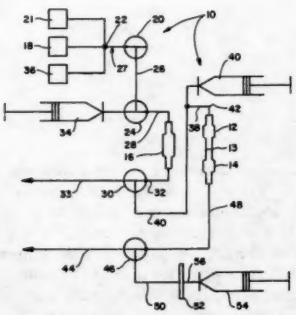
PROCESS AND APPARATUS FOR SYNTHESIZING OXYGEN-15 LABELLED BUTANOL FOR POSITRON EMISSION TOMOGRAPHY

Marc S. Berridge, Solon, Ohio, assignor to Case Western Reserve University, Cleveland, Ohio

Filed Jun. 13, 1990, Ser. No. 537,312

Int. Cl.[5] C07C *29/09, 29/76, 31/12*

U.S. Cl. 568—917 18 Claims



1. A process for synthesizing ^{15}O-labeled butanol with sufficient product yield and purity for use in positron emission tomography comprising the steps of:

a) providing a target gas comprised of ^{15}O-labeled oxygen;

b) passing the target gas over an alumina support containing a tri-n-butylborane reagent thereby trapping the ^{15}O-labeled oxygen gas in the support, wherein said trapped ^{15}O-labeled gas oxidizes and labels the borane reagent contained on the alumina support to produce an oxidized and labeled butyl-borane complex;

c) adding water to the alumina support to hydrolyze the oxidized and labeled butyl-borane complex thereby releasing labeled butanol and producing a butyl-borane mixture containing same;

d) passing the hydrolyzed butyl-borane mixture containing the labeled butanol over a reverse phase support to collect the labeled butanol;

e) washing the reverse phase support containing the collected labeled butanol with water to remove the impurities produced by the oxidation and hydrolysis steps thereby purifying the labeled butanol; and,

f) eluting the purified labeled butanol from the reverse phase support thereby collecting the purified labeled butanol.

5,082,981

PROCESS FOR THE SYNTHESIS OF PERFLUOROALKANDIENES

Gianangelo Bargigia; Vito Tortelli, both of Milan; Claudio Tonelli, Concorezzo, and Silvana Modena, Monza, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Continuation of Ser. No. 449,317, Dec. 11, 1989, abandoned, which is a continuation of Ser. No. 124,044, Nov. 23, 1987, abandoned. This application Oct. 29, 1990, Ser. No. 607,771

Claims priority, application Italy, Nov. 27, 1986, 22467 A/86

The portion of the term of this patent subsequent to Mar. 3, 2004, has been disclaimed.

Int. Cl.[5] C07C *17/00, 17/26*

U.S. Cl. 570—156 5 Claims

1. A process for preparing perfluoroalkandienes of formula:

$$CF_2{=}CF(CF_2)_a\left(CF_2{-}\underset{\displaystyle CF_3}{\underset{|}{CF}}\right)_b{-}CF{=}CF_2$$

wherein a is an integer from 0 to 6, b is an integer from 0 to 2 and the sum a+b is between 0 and 6, comprising dehalo fluorinating α, ω-dibromo or α, ω-bromo, iodoperfluoroalkanes of the formula:

$$X{-}CF_2{-}CF_2{-}(CF_2)_a\left(\underset{\displaystyle CF_3}{\underset{|}{CF_2CF}}\right)_b{-}CF_2{-}CF_2{-}Y$$

wherein X, Y=Br, I and X is different from Y if X or Y=I with an organometallic compound of Mg, Zn, Cd or Li, either in the presence of an aprotic solvent belionging to the hydrocarbon class or in the presence of an aprotic polar solvent belonging to the class of ethers and cyclic ethers and mixtures thereof, at temperature between −80° C. and +150° C.

5,082,982

OXYIODINATION PROCESS FOR MANUFACTURE OF 2,6-DIIODONAPHTHALENE

Thomas L. Yount, Mt. Carmel; George G. Mayfield, and Victor H. Agreda, both of Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 2, 1990, Ser. No. 608,423

Int. Cl.[5] C07C *17/152*

U.S. Cl. 570—203 1 Claim

1. A process comprising

(A) selectively preparing 2-monoiodonaphthalene within a first zone comprised of a first oxyiodination sub-zone and a first separation sub-zone by

(1) introducing into the first oxyiodination sub-zone iodine and an oxygen and naphthalene containing stream which is withdrawn from the first separation zone,

(2) selectively oxyiodinating within the first oxyiodination sub-zone in the presence of an 13X zeolite catalyst a portion of the naphthalene in the oxygen and naphthalene containing stream into 2-monoiodonaphthalene,

(3) withdrawing from the first oxyiodination sub-zone a stream which is selectively high in 2-monoiodonaphthalene,

(4) introducing the stream which is withdrawn from the first oxyiodination sub-zone and is selectively high in 2-monoiodonaphthalene into the first separation sub-zone,

(5) introducing oxygen into the first separation sub-zone,

(6) introducing naphthalene into the first separation sub-zone,

(7) separating within the first separation sub-zone the stream which is selectively high in 2-monoiodonaphthalene into a stream which is both selectively high in 2-monoiodonaphthalene and contains substantial quantities of 2-monoiodonaphthalene,

(8) withdrawing from the first separation sub-zone the stream which is both selectively high in 2-monoiodonaphthalene and contains substantial quantities of 2-monoiodonaphthalene,

(B) selectively preparing 2,6-diiodonaphthalene within a second zone comprised of a second oxyiodination sub-zone and a second separation sub-zone by

(1) introducing into the second oxyiodination sub-zone iodine and a stream which is withdrawn from the second separation sub-zone and is selectively high in 2-monoiodonaphthalene and contains oxygen,

(2) selectively oxyiodinating within the second oxyiodination sub-zone in the presence of an 13X zeolite catalyst the 2-monoiodonaphthalene in the stream which is selectively high in 2-monoiodonaphthalene and contains oxygen into 2,6-diiodonaphthalene,

(3) withdrawing from the second oxyiodination sub-zone a stream which is selectively high in 2,6-diiodonaphthalene,

(4) introducing into the second separation sub-zone the stream which is withdrawn from the second oxyiodination sub-zone and is selectively high in 2,6-diiodonaphthalene,

(5) introducing into the second separation sub-zone the stream which is withdrawn from the first separation sub-zone and is selectively high in 2-monoiodonaphthalene,

(6) introducing oxygen into the second separation sub-zone,

(7) separating within the second separation sub-zone the stream which is selectively high in 2,6-diiodonaphthalene into a stream which is both selectively high in 2,6-diiodonaphthalene and contains substantial quantities of 2,6-diiodonaphthalene,

(8) withdrawing from the second separation sub-zone the stream which is both selectively high in 2,6-diiodonaphthalene and contains substantial quantities of diiodonaphthalene.

5,082,983

REDUCTION OF BENZENE CONTENT OF REFORMATE IN A CATALYTIC CRACKING UNIT

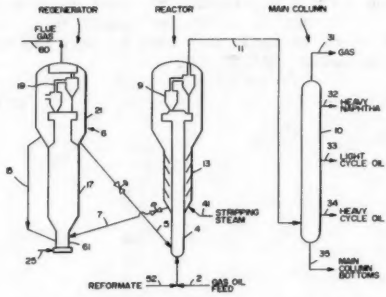
Lloyd L. Breckenridge, Philadelphia, Pa.; Diane V. Jorgensen, Wilmington, Del., and Ajit V. Sapre, West Berlin, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Sep. 14, 1990, Ser. No. 583,266
Int. Cl.[5] C07C *5/22, 5/52*
U.S. Cl. 585—475 **20 Claims**

1. A process for reducing the benzene content of a light reformate fraction comprising C6 hydrocarbons and benzene characterized by

operating a conventional catalytic cracking means at conventional catalytic cracking conditions and cracking in said catalytic cracking reactor a conventional heavy feed to lighter products including a gasoline boiling range fraction and

adding said light reformate fraction to said catalytic cracking reactor and converting in said cracking reactor said conventional heavy feed and at least a portion of the



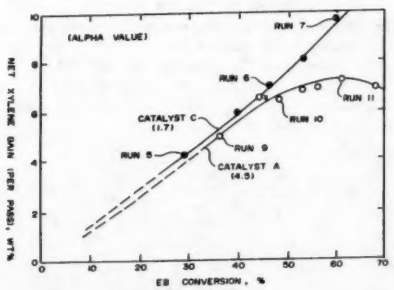
benzene in the light reformate to heavier aromatic molecules.

5,082,984

DUAL FUNCTION CATALYST AND ISOMERIZATION THEREWITH

Lawrence M. Brown, deceased late of Lawrenceville, N.J. by Dorothy M. Brown, Administratrix , and Tracy J. Huang, Lawrenceville, N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Division of Ser. No. 471,462, Jan. 29, 1990, Pat. No. 5,028,573.
This application Mar. 4, 1991, Ser. No. 664,243
Int. Cl.[5] C07C *5/22*
U.S. Cl. 585—481 **12 Claims**



1. A process for isomerizing a feed containing an aromatic C_8 mixture of ethyl benzene and xylene by contacting the feed, under conversion conditions with a catalyst comprising:

(a) a crystalline aluminosilicate zeolite having a low acid activity as measured by an alpha value of from about 0.02 to about 11, an average crystal size of not more than about 0.4 microns for at least 50% by weight of the crystals, a silica to alumina ratio of at least about 12, a constraint index of about 1 to 12, and, a xylene sorption capacity greater than 1 gram per 100 grams of zeolite and an ortho-xylene sorption time for 30 percent of said capacity less than 10 minutes, said sorption capacity and sorption time being measured at 120° C. and a xylene pressure of 4.5±0.8 mm of mercury, and

(b) a supported metal of Group VIII of the Periodic Table having a high hydrogenation/dehydrogenation activity to provide the catalyst with a dehydrogenation activity of at least 10, and

(c) the catalyst having an acid activity as measured by an alpha value of 0.005 to 3.

5,082,985

PROCESS FOR CONTROLLING HYDROCARBON STEAM CRACKING SYSTEM USING A SPECTROPHOTOMETER

Pierre G. Crouzet, 5, Allée Darius Milhaud, 13500 Martigues, France, and André J. Martens, Les Jardinets - Avenue Jules Ferry, 13220 Chateauneuf Les Martigues, France

Filed May 19, 1989, Ser. No. 354,219
Claims priority, application France, May 30, 1988, 8807322
Int. Cl.[5] C10G *9/36*
U.S. Cl. 585—501 **16 Claims**

1. A process for steam cracking a mixture of hydrocarbons comprising passing steam and the mixture of hydrocarbons through at least one heated cracking tube maintained at cracking reaction conditions wherein the process is controlled by (a) using a spectrophotometer to measure n absorbances of the mixture of hydrocarbons fed to the cracking tube, wherein n is at least two, wherein each absorbance is measured at a wavelength in the range from 0.8 to 2.6 microns, (b) choosing at least one condition of the cracking reaction, and using the n absorbance measurements R_i to determine at least one value V of the at least one of the conditions of the cracking reaction said value V being determined through a correlation relationship, said correlation relationship connecting the n absorbance measurements Ri with a desired space time yield P of one or more products of the cracking reaction and with the value V and (c) controlling the process to operate at the determined value (s) V in order to obtain the desired space time yield P.

5,082,986

PROCESS FOR PRODUCING LUBE OIL FROM OLEFINS BY ISOMERIZATION OVER A SILICOALUMINOPHOSPHATE CATALYST

Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 17, 1989, Ser. No. 311,972
Int. Cl.[5] C07C *5/22*
U.S. Cl. 585—667 **44 Claims**

1. A process for producing a $C_{20}+$ lube oil from a $C_{20}+$ olefin feed comprising isomerizing an olefin feed over a catalyst comprising an intermediate pore size silicoaluminophosphate molecular sieve and at least one Group VIII metal.

5,082,987

TREATMENT OF HYDROCARBONS

Michael E. Olbrich, Naperville, Ill.; Rebecca L. Jones, West Columbia, Tex., and Roger W. Fenstermaker, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 15, 1990, Ser. No. 597,932
Int. Cl.[5] C07C *5/13, 7/12*; B01J *20/34*
U.S. Cl. 585—737 **4 Claims**

1. A method of treating a caustic-treated hydrocarbon feed mixture having a contaminating concentration of water and sulfur compounds comprising the steps of:

(a) separating said caustic-treated hydrocarbon feed mixture into a first stream, comprising normal pentane and heavier hydrocarbon compounds and a second stream comprising isopentane and lighter hydrocarbon compounds;

(b) contacting said first stream with a molecular sieve material to adsorb water and sulfur compounds from said first stream and thereby produce a reactor feed stream having a significant reduction in the concentration of said water and sulfur compounds;

(c) isomerizing said reactor feed stream by contacting said reactor feed stream in the presence of hydrogen under suitable isomerization conditions with an isomerization catalyst to produce an isomerate stream comprising isopentane, normal pentane, butane and lighter hydrocarbons, and cyclopentane and heavier hydrocarbons;

(d) separating said isomerate stream into at least a third stream comprising cyclopentane and heavier hydrocarbons, a fourth stream comprising butanes and lighter hydrocarbons, a fifth stream comprising normal pentane, and a sixth stream comprising isopentane;

(e) regenerating said molecular sieve material by contacting at least a portion of said molecular sieve material under conditions suitable for removing at least a significant portion of said water and sulfur compounds adsorbed by said molecular sieve material during step (b) with a regeneration purge stream comprising at least a portion of said third stream to produce a regeneration effluent stream comprising said regeneration purge stream and at least a portion of the water and sulfur compounds from said molecular sieve material; and

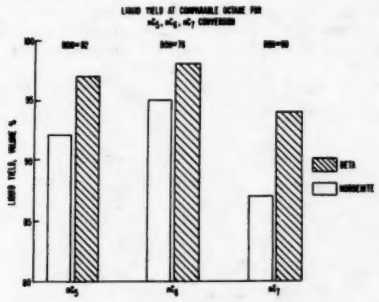
(f) withdrawing said regeneration effluent stream from said molecular sieve material.

5,082,988

ISOMERIZATION CATALYST AND PROCESS FOR ITS USE

Dennis L. Holtermann, Crockett, Calif., assignor to Chevron Corporation, San Francisco, Calif.

Continuation of Ser. No. 150,182, Jan. 29, 1988, abandoned. This application Jul. 6, 1989, Ser. No. 376,972
Int. Cl.[5] C07C *5/13*
U.S. Cl. 585—739 **7 Claims**



1. A process for isomerizing a feedstream of predominantly normal and singly branched C_5 to C_7 hydrocarbons to form an isomerate having a greater concentration of doubly and singly branched hydrocarbons and a substantially higher RON than said feedstream comprising contacting a catalyst formed of an acidic beta zeolite having between 0.05 and 5 wt% of at least one Group VIII metal, with a feedstream having predominantly normal or singly branched C_5 to C_7 components at a temperature from about 400° F. to about 600° F., at a pressure between about 50 psig and about 1000 psig, an H_2/HC ratio between about 0.5 and 10 and an LHSV of between about 1 and 10 to form an isomerate having a substantial increase in both the multiply and singly branched paraffins and having an RON greater than said feedstream.

5,082,989

INTEGRATED PROCESS FOR C_4, C_5 AND C_6 ISOMERIZATION

Brian H. Johnson, Arlington Heights, Ill., assignor to UOP, Des Plaines, Ill.

Filed Dec. 29, 1989, Ser. No. 459,160
Int. Cl.[5] C07C *5/13*
U.S. Cl. 585—748 **13 Claims**

1. A process for isomerizing a first feedstock comprising normal butane and a second feedstock comprising C_5 and C_6 acyclic hydrocarbons, said process comprising:

a) combining said first feedstock with a portion of a hydrogen stream to produce a first combined feedstream comprising hydrogen and normal butane;

b) passing said first combined feedstream to a first isomerization zone and contacting said first combined feedstream,

at butane isomerization conditions, with an isomerization catalyst and withdrawing a first isomerization zone effluent comprising isobutane and hydrogen from said first isomerization zone;

c) heating said second feedstock by at least indirectly contacting said first isomerization zone effluent with said second feedstock and admixing at least a portion of the hydrogen from said hydrogen stream with said second feedstock to produce a second combined feedstream;

d) passing said second combined feedstream to a second isomerization zone and contacting said second combined feedstream with an isomerization catalyst at conditions for the isomerization of C_5 and C_6 hydrocarbons and withdrawing a second isomerization zone effluent;

e) passing said first and second effluent streams to a common separation zone;

f) withdrawing a first light gas stream comprising hydrogen from said separation zone; and

g) withdrawing at least one product stream comprising branched-chain hydrocarbons from said separation zone.

5,082,990

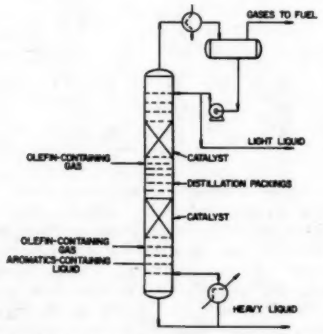
ALKYLATION OF AROMATICS-CONTAINING REFINERY STREAMS

C. Richard Hsieh, San Rafael, and A. John Gloyn, Walnut Creek, both of Calif., assignors to Chevron Research and Techology Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 264,121, Oct. 28, 1988, abandoned. This application Nov. 1, 1990, Ser. No. 607,975

Int. Cl.[5] C07C *2/68*

U.S. Cl. 585—467 **19 Claims**



1. A method for reducing the benzene content of a complex refinery stream containing a minor amount of benzene comprises:

(a) Feeding said complex refinery stream containing a minor amount of benzene to a distillation column reactor, said reactor containing one or more fixed beds of zeolite-containing alkylation catalysts separated by distillation packing;

(b) Feeding one or more olefin-containing streams into said reactor;

(c) Contacting said benzene with said olefin under distillation conditions in the presence of said zeolite-containing alkylation catalyst to produce an alkylation product; and

(d) Recovering a complex refinery stream of reduced benzene content comprising said alkylation product.

5,082,991

INBRED CORN LINE PHN37

Jack A. Cavanah, Johnston, Iowa, assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Aug. 30, 1989, Ser. No. 402,025

Int. Cl.[5] A01H *5/00, 4/00;* **C12N** *5/04*

U.S. Cl. 800—200 **6 Claims**

1. Inbred corn seed designated PHN37 having ATCC accession No.

5,082,992

INBRED CORN LINE PHP02

William B. Ambrose, Algona, Iowa, and Thomas C. Kevern, Milton, Wis., assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Nov. 1, 1988, Ser. No. 266,428

Int. Cl.[5] A01H *5/00, 4/00, 1/00;* **C12N** *5/04*

U.S. Cl. 800—200 **8 Claims**

1. Inbred corn seed designated PHP02 having ATCC accession No.

5,082,993

HIGH-LYSINE CORN

Jerry Strissel, Harlan; George Pollak, Guthrie Center, and Bryan Kindiger, Harlan, all of Iowa, assignors to Orsan, Paris, France

Filed Aug. 1, 1989, Ser. No. 388,599

Int. Cl.[5] A01H *5/00, 1/00*

U.S. Cl. 800—200 **5 Claims**

1. A corn plant of the line WIL500 wherein said plant produces corn kernels containing at least 10.5% crude protein and 0.31% lysine based on 12% kernel moisture.

5,082,994

END CONNECTOR FOR CONTACTING AT LEAST TWO SHIELDED CABLES

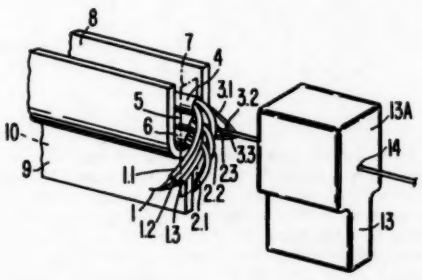
Dieter Bräunig, Stuttgart, and Axel Willikens, Waiblingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Jul. 18, 1990, Ser. No. 553,619

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1989, 3924677

Int. Cl.[5] H02G *15/10*; H01R *43/00, 9/00*

U.S. Cl. 174—87 13 Claims



1. An end connection for coupling a plurality of cables of the type which each have at least one electrically conductive core and an electrically conductive shield disposed about the at least one core, wherein the cores are to be coupled into core strands electrically isolated from each other and all shields are to be coupled together, the end connector comprising:

an insulating body having a plurality of partition walls defining a plurality of insulating chambers for accommodating respective cable core strands, each insulating chamber having an end connection region for accommodating a connection point of the core strands;

a cap coupled to the insulating body to cover the end connection regions, the cap having an inner surface facing the end connection regions and a metallic outer surface, an opening being provided for passing the shields of the cables to be connected from the end connection regions to the outer surface of the cap, wherein the shields are to be electrically coupled to the outer surface; and

an insulating layer surrounding the cap for insulating the outer surface of the cap and the shields, and for fixing the position of the cables.

10. A method for coupling cables, each cable having at least one electrically conductive core and an electrically conductive shield disposed about the at least one core, the method comprising the steps of:

electrically coupling the cores of cables to be coupled to one another to form at least one core strand,

guiding the cables and the at least one core strand toward end connection regions in insulating chambers of an insulating body,

closing off the insulating body with a cap which clearly covers the connection regions of the cores of the cables, the cap having a metallic outer surface, there simultaneously being an electric insulation between the connection regions of the cores of the cables and the metallic outer surface of the cap,

coupling shields of the individual shielded cables to one another,

inserting the coupled shields of the individual cables through an opening to the metallic outer surface of the cap,

electrically conductively coupling the shields to the metallic outer surface of the cap, and

surrounding the cap with an insulating layer which fixes the position of the cables.

5,082,995

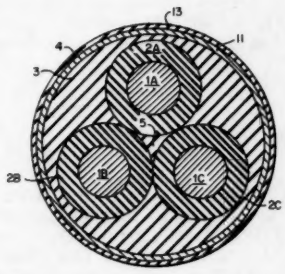
ELECTRICAL CABLES

John R. Paterson, Cumbria, and Leonard Warren, Manchester, both of Great Britain, assignors to Vickers Shipbuilding & Engineering Limited, Cumbria, United Kingdom

Filed Dec. 13, 1989, Ser. No. 456,819

Int. Cl.[5] H01B *7/34*

U.S. Cl. 174—113 R 9 Claims



1. An electrical cable comprising an electrical conductor enveloped in electrically insulating material formed from a composition comprising an elastomer, from 40 to 45% by weight of silicon carbide, and from 3 to 35% by weight of an oxide of iron (as Fe_2O_3).

5,082,996

SWITCHING MECHANISM IN CIRCUIT BREAKER

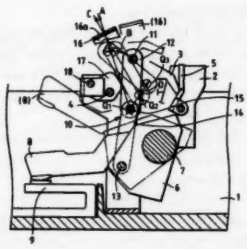
Tatsunori Takahashi; Makoto Unuma, and Naoshi Uchida, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Nov. 16, 1989, Ser. No. 436,871

Claims priority, application Japan, Nov. 18, 1988, 63-292054

Int. Cl.[5] H01H *73/02*

U.S. Cl. 200—401 4 Claims



1. A switching mechanism in a circuit breaker, comprising:

latch means having two end portions;

latch pin means for swingably supporting one end portion of said latch means;

tripping means for normally locking the other end portion of said latch means to prevent said latch means from being swung;

stationary contactor means;

holder means for holding a movable contactor;

switching shaft means for rotatably supporting said holder means;

toggle link means including an upper link coupled to said latch means, and a lower link coupled to said holder means;

handle lever means with an operating handle, said handle lever means being swingable;

center pin means for coupling said upper link of said toggle link means to said lower link thereof;

switching spring means for connecting between said center pin means and said handle lever means and for providing

a tensile force therebetween, wherein when said handle lever means is set at an "on" position to release said latch means, the tensile force of said switching spring means goes beyond the dead point with respect to said toggle link means to reverse said toggle link means, thereby tripping said circuit breaker; and

interfering stopper means disposed in contact with said upper link of said toggle link means for limiting the operation of said upper link when said toggle link means is reversed so that said center pin means is moved along a straight line when said circuit breaker is tripped.

5,082,997

QUICK-BREAK MINIATURE SWITCH

Roger Vialy, Impasse Desbrun, 26120 Chabeuil, France

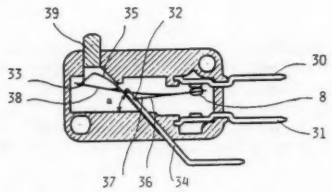
PCT No. PCT/FR87/00122, § 371 Date Oct. 14, 1988, § 102(e) Date Oct. 14, 1988, PCT Pub. No. WO87/06388, PCT Pub. Date Oct. 22, 1987

PCT Filed Apr. 14, 1987, Ser. No. 294,572

Claims priority, application France, Apr. 16, 1986, 86 05673

Int. Cl.[5] H01H *5/18, 5/06*

U.S. Cl. 200—452 **5 Claims**



1. A snap-action electrical switch, comprising:

a housing having an interior;

a pair of fixed terminals, each having stationary electrical contacts mounted within the interior of the housing;

a common terminal having an inner end mounted within the interior of the housing and having opposite, generally planar, terminal surfaces;

a one-piece, movable switching element having a mobile electrical contact and mounted for movement between switching positions in each of which the mobile contact engages one of the stationary contacts, said switching element having an opening through which the inner end of the common terminal extends, a pivot portion pivotably engaged with one of the terminal surfaces of the inner end of the common terminal at one side of the opening, and a resilient blade portion located at the other side of the opening;

an elongated leaf spring having one end fixed to the inner end of the common terminal an opposite end fixed to the blade portion, and a generally planar, spring portion intemediate the ends of the spring and extending through the op ening of the switching element into surface engagement with the other of the terminal surfaces of the inner end of the common terminal to place the switching element under tension; and

an actuator mounted for displacement on the housing for moving the switching element between the switching positions, said actuator being in force-transmitting engagement with the blade portion to move the blade portion and, in turn, to progressively break the surface engagement between the generally planar spring portion and the other terminal surface of the inner end of the common terminal.

5,082,998

SWITCHING POWER SUPPLY FOR MICROWAVE OVEN

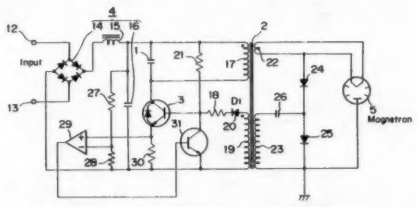
Hitoshi Yoshioka, Kawasaki, Japan, assignor to Yutaka Electric Mfg. Co., Ltd., Japan

Filed Oct. 31, 1990, Ser. No. 606,283

Claims priority, application Japan, Jan. 16, 1990, 2-6792

Int. Cl.[5] H05B *6/68;* **H02M** *7/5383*

U.S. Cl. 219—10.55 B **2 Claims**



1. A switching power supply for a microwave oven including a switching means for changing power from a DC source to a pulsed form, said switching means coupled to a primary minding of an inverter transformer supplying power to a magnetron, the magnetron coupled to a secondary winding of said inverter transformer, said switching means including a control input and said inverter transformer including a supplementary winding coupled to said control input of said switching means thereby providing a self-excited voltage resonance power source,

wherein said switching means comprises a primary transistor having a base, an emitter and a collector, the collector being connected in a series connection with said inverter transformer and said supplementary winding being connected between the base and the emitter through a diode,

further comprising reference means for generating a reference voltage by dividing an input voltage,

comparator means,

said reference means inputting said reference voltage to one terminal of said comparator means, a voltage detected by a resistor coupled to the emitter of said primary transistor being connected to another terminal of said comparator means,

further comprising a supplementary transistor connected between the base and emitter of said primary transistor,

an output of said comparator means connected to said supplementary transistor for turning on said supplementary transistor at a time when said detected voltage exceeds said reference voltage, thereby turning off said primary transistor.

5,082,999

MICROWAVE OVEN HAVING DEVICE FOR PREVENTING CONCENTRATION OF MICROWAVES ON HEATER ELEMENT

Hideki Yamaguchi, Yamatokoriyama; Masahiro Nitta, Nara, and Katsunori Furukawa, Kashihara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 8, 1990, Ser. No. 535,030

Claims priority, application Japan, Jun. 13, 1989, 1-151451; Jun. 14, 1989, 1-151772

Int. Cl.[5] H05B *6/64*

U.S. Cl. 219—10.55 B **6 Claims**

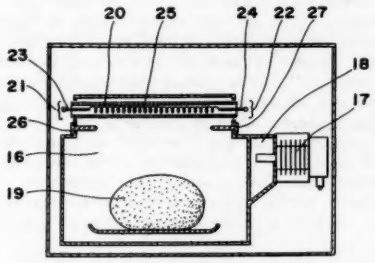
1. A high-frequency heating device comprising:

a housing;

a wall structure formed in said housing and having a heating chamber and a heater compartment defined therein, said heater compartment being open towards the heating chamber in communication therewith, the wall structure for defining the heater compartment being made of microwave reflecting material;

microwave supply means, fixedly mounted in said housing, for supplying microwaves into the heating chamber;

a heater sheathed by dielectric material accommodated in the heater compartment and extending through opposite side walls of the heater compartment;



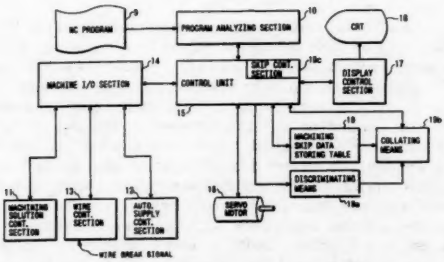
microwave concentration prevention means, disposed closer to the heating chamber than said heater and securely mounted on at least one of said side walls of the heater compartment, for preventing a concentration of microwaves on said heater.

5,083,000

WIRE CUT TYPE ELECTRIC DISCHARGE MACHINING METHOD AND APPARATUS

Makoto Sakaue, Aichi, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed Jun. 19, 1990, Ser. No. 540,238
Claims priority, application Japan, Sep. 5, 1989, 1-229645
Int. Cl.[5] B23H *7/06, 7/20*
U.S. Cl. 219—69.12 **2 Claims**



1. A wire cut type electric discharge machining method in which, when a fault occurs during a configuration machining operation, the configuration machining operation is suspended and skipped over to the next configuration machining operation, said method comprising the steps of:

a step of storing machining start position data of said configuration machining operation with which said fault has occurred;

a step of determining whether or not a machining operation is a finish machining operation;

a step of collating, when said determination results in a finish machining operation, said machining start position data thus stored with machining start position data in said finish machining operation; and

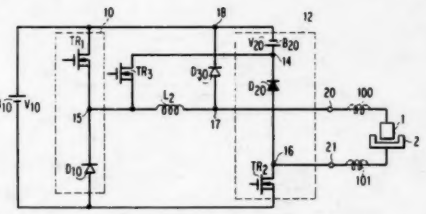
a step of carrying out said finish machining operation when said collation results in non-coincidence, and skipping said finish machining operation over to the following finish machining operation when said collation results in coincidence.

5,083,001

WAVEFORM CONTROL DEVICE FOR ELECTRICAL DISCHARGE MACHINING APPARATUS

Yoshihide Kinbara; Morihisa Nishikawa, and Yoshio Ozaki, all of Aichi, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Jun. 14, 1990, Ser. No. 537,720
Claims priority, application Japan, Aug. 8, 1989, 1-203871
Int. Cl.[5] B23H *1/02*
U.S. Cl. 219—69.18 **13 Claims**



1. A waveform control device for connection to an electrode and workpiece of an electrical discharge machining apparatus, comprising:

first and second DC power sources;

a first series circuit connected in parallel with said first DC power source and comprising a first switching means and a first diode which define a first node therebetween;

a second series circuit connected in parallel with said first DC power source and comprising said second DC power source, a second switching means and a second diode, a second node being defined between said second switching element and said second diode;

reactor means disposed in a circuit including an electrode and a workpiece and connecting said first node and said second node;

third switching means, disposed in a circuit connecting a third node, defined between said second DC power source and said second diode, and said first node; and

a third diode disposed in a circuit connecting a fourth node, defined between the first DC power source and said second DC power source, and a fifth node defined between said reactor means and one of said electrode and said workpiece.

5,083,002

SHIELDING GAS MIXTURE FOR WELDING SUPERALLOYS

Gregory L. Hoback, Greentown, and James L. Meyers, Kokomo, both of Ind., assignors to Haynes International, Inc., Kokomo, Ind.

Filed Jan. 10, 1991, Ser. No. 639,434
Int. Cl.[5] B23K *9/16*
U.S. Cl. 219—74 **6 Claims**

1. A shielding gas mixture suitable for use in arc welding and consisting essentially of, in percent by volume, about 5 to 13% helium, 0.1 to 0.9% carbon dioxide and the balance argon plus impurities.

5,083,003

ADAPTIVE STEPPER

Charles A. Clark, Jr.; Wen T. Kuo, both of Chatsworth, and Hyon O. Wu, Canoga Park, all of Calif., assignors to Square D Company, Palatine, Ill.

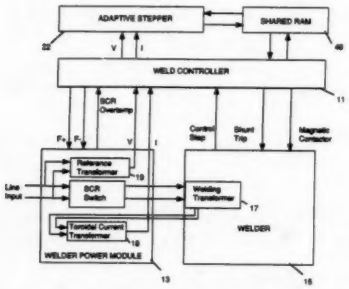
Filed Jun. 15, 1990, Ser. No. 538,826
Int. Cl.[5] B23K *11/24*
U.S. Cl. 219—110 **50 Claims**

38. A weld controller system for controlling the operation of a welder including a weld transformer and at least one pair of electrodes that apply current and create heat between at least

two workpieces, wherein the weld controller system has a plurality of welding cycles including a preceding welding cycle, comprising:

a) welder power means operatively connected to the weld transformer for supplying current to the electrodes and creating a predetermined amount of heat in the workpieces, wherein the workpieces have an electrical resistance;

b) resistance determining means operatively connected to the workpieces for determining a maximum resistance which is dependent on the workpieces' resistance; and,



c) adaptive stepper means operatively connected to said resistance determining means and said welder power means for varying the amount of said heat applied to the workpieces by said welder power means depending upon said resistance measured by said measuring means during the preceding welding cycle, wherein said adaptive stepper means increases said heat of the workpieces a predetermined increment after a first predetermined number of weld cycles, said adaptive stepper means decreases said heat of the workpieces a predetermined increment if during said first predetermined number of weld cycles said resistance is below a predetermined value for a predetermined consecutive number of weld cycles.

5,083,004

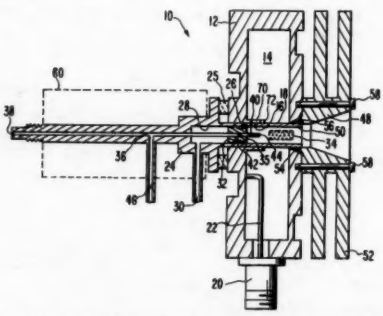
SPECTROSCOPIC PLASMA TORCH FOR MICROWAVE INDUCED PLASMAS

Gregory J. Wells, Suisun, and Barbara A. Bolton, Albany, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed May 9, 1989, Ser. No. 349,205

Int. Cl.[5] B23K *9/00*

U.S. Cl. 219—121.5 **18 Claims**



1. A microwave induced plasma torch for use with a gas chromatograph comprising:

a dielectric, microwave permeable plasma discharge tube;

a source of microwave power coupled to said plasma discharge tube;

a torch body attached to one end of said plasma discharge tube, said body possessing an end bore juxtaposed in coaxial alignment with said plasma discharge tube;

a means to receive a plasma support gas that is in fluid communication with said end bore in the torch body;

a vortex means disposed within said end bore for inducing a vortex support gas flow in the plasma discharge tube positioned to suspend and stabilize a filamentary plasma about a portion of the longitudinal axis and away from the interior wall of said plasma discharge tube during the operation of the torch, said vortex means inducing a smooth, non-turbulent vortex support gas flow;

a substantially tubular gas jet means connected to the torch body and extending beyond the vortex means for introducing a sample from said gas chromatograph at a high velocity to a point proximate the plasma, whereby carbon deposition in the plasma discharge tube is minimized.

5,083,005

ELECTRODE FOR WORKING PLASMA TORCH AND CORRESPONDING TORCH

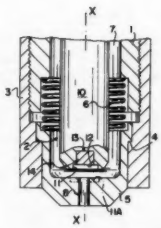
Patrick Degrigny, Lyons, France, assignor to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Jul. 13, 1990, Ser. No. 552,092

Claims priority, application France, Jul. 28, 1989, 89 10224

Int. Cl.[5] B23K *9/00*

U.S. Cl. 219—121.52 **6 Claims**



1. In a plasma torch of the short circuiting ignition type comprising a nozzle having an internal face into which opens an arc and plasma opening, and an elongated electrode having a longitudinal axis and an end portion provided with an emissive insert, said nozzle and said electrode being relatively movable parallel to said axis between a working position wherein said end portion and said internal face are spaced from one another and an arc ignition position wherein said end portion contacts said internal face, said opening being in alignment with said axis; the improvement wherein in said arc ignition position said insert confronts but is permanently spaced, in a direction parallel to said axis, from an adjacent portion of said internal face of said nozzle surrounding said opening.

5,083,006

LASER DRILLING OF COMPONENTS

David Stroud, Bristol, England, assignor to Rolls-Royce plc, London, England

Filed Feb. 25, 1991, Ser. No. 660,049

Claims priority, application United Kingdom, Mar. 2, 1990, 9004798

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.71 **4 Claims**

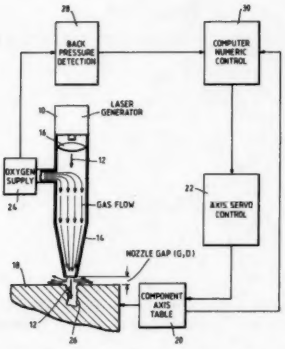
1. A method of drilling a plurality of holes in a surface of a component using a laser beam and means for focusing the beam through a nozzle onto the surface of the component, the method comprising the steps of,

(a) setting a nominal gap G between the nozzle and the surface to be drilled, at a zero datum point on the surface,

(b) for each point of the surface where a hole is to be drilled,

(i) locating the nozzle over the point,

(ii) measuring the distance D between the nozzle and the point,
(iii) computing an offset G-D for the point,
(iv) storing the location of the point and its associated offset G-D in a data storage and retrieval system,
(c) for each point to be drilled,
(i) locating the nozzle over the point,



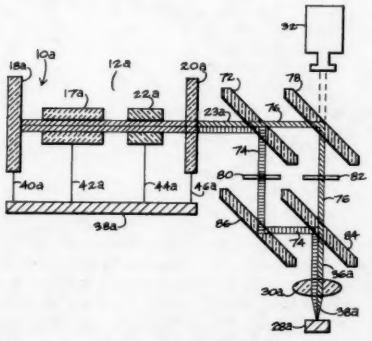
(ii) retrieving from the data storage and retrieval system the offset G-D associated with the point,
(iii) moving the component in relation to the focusing means through a distance equal to the offset G-D until the distance of the nozzle from the point is G,
(iv) activating the laser beam to drill a hole in the component at the point.

5,083,007

BONDING METAL ELECTRICAL MEMBERS WITH A FREQUENCY DOUBLED PULSED LASER BEAM

Philip J. Spletter, Cedar Park, and Rama R. Goruganthu, Austin, both of Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Filed Aug. 1, 1990, Ser. No. 561,555
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.64 **36 Claims**



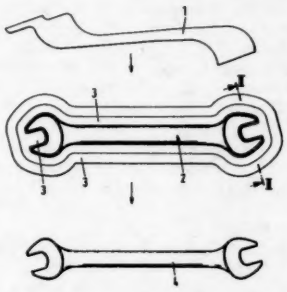
1. A method for laser bonding electrical members, comprising:
contacting first and second metal electrical members to form a bond interface therebetween;
generating a pulsed laser beam comprising a first wavelength and a second wavelength between 300–600 nm measuring one-half the first wavelength; and
directing the pulsed laser beam to focus upon and couple to at least one of the members, thereby bonding the first and second members at the bond interface.

5,083,008

METHOD FOR THE MANUFACTURE OF DIE-FORGED OR DIE-STAMPED WORKPIECES

Hermann-Jochen Zerver, Remscheid, Fed. Rep. of Germany, assignor to Hazet-Werk Hermann Zerver GmbH & Co. KG, Remscheid, Fed. Rep. of Germany

Filed Aug. 31, 1990, Ser. No. 577,314
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.69 **3 Claims**



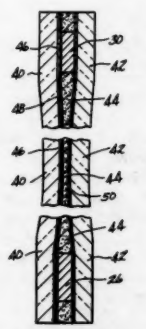
1. A method for the manufacture of die-forged or die-stamped workpieces, comprising the steps of:
manufacturing the die-stamped or die-forged rough workpiece;
heat-treating the rough workpiece to achieve a structural change;
after the heat-treatment of the rough workpiece, removing by a trajectory laser a burr on the rough workpiece, resulting from said stamping or forging step; and
simultaneously to said removal step, machining areas important for the functioning of said workpiece with said trajectory laser.

5,083,009

FOG-RESISTANT MIRROR ASSEMBLY

Carl Reiser, 142 Cider Mill Rd., Glastonbury, Conn. 06033, and Richard Sawyer, 5 Trails End Dr., Canton, Conn. 06019

Filed Jun. 16, 1989, Ser. No. 367,140
Int. Cl.[5] H05B *3/84*
U.S. Cl. 219—219 **6 Claims**



1. A fog resistant mirror assembly usable with conventional household current comprising:
a) a first glass sheet having an electrically conductive reflective material coating on a surface thereof;
b) a scribe line traversing said reflective material coating to divide the latter into adjacent electrically conductive separate parts, said scribe line being covered with a high dielectric strength material sufficient to prevent arcing across said scribe line;

c) a second glass sheet having a high reflective material coating thereon, said second sheet being adhered by an adhesive layer to said first glass sheet with said reflective material coating on said first glass sheet being disposed in close heat transfer relationship with said second glass sheet;

d) a current-inlet bus sandwiched between said first and second sheets and connected to one of said reflective material coating parts at one end of said first glass sheet;

e) a current outlet bus sandwiched between said first and second sheets and connected to an adjacent one of said reflective material coating parts at said one end of said first glass sheet;

f) a current transfer bus sandwiched between said first and second sheets and connected to both of said reflective material coating parts and spanning said scribe line at an opposite end of said first glass sheet; and

g) said inlet, transfer and said outlet buses combining with said scribe line to increase the current flow path through said reflective material coating to a length which exceeds the distance between said first and opposite ends of said first glass sheet; and

h) said buses having a through plane thickness which is greater than the thickness of said adhesive layer whereby said first and second glass sheets are stressed toward each other medially so as to apply a constant pressure on said buses to maintain intimate electrical contact between said reflective material coating and said buses.

5,083,010

PYROLYTIC SELF-CLEANING STOVE

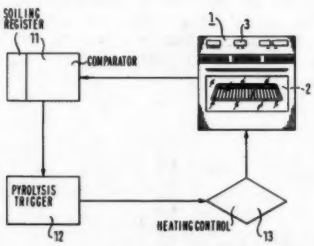
Karlheinz Henry, Trostberg, and Josef Gerl, Palling, both of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeräte GmbH, Munich, Fed. Rep. of Germany

Filed May 28, 1991, Ser. No. 706,296

Claims priority, application Fed. Rep. of Germany, May 31, 1990, 4017628

Int. Cl.[5] F27D *11/02*; H05B *1/02*

U.S. Cl. 219—413 **14 Claims**



1. A stove with pyrolytic self-cleaning, comprising an oven having a cooking chamber to be heated, means for pyrolytically self-cleaning said cooking chamber, and an automatic pyrolysis system for recognizing a limit value for soiling and controlling pyrolytic self-cleaning, said automatic pyrolysis system including a limit value comparator and a pyrolysis trigger connected to said limit value comparator.

5,083,011

AIR HEATER WITH SAFETY CONTROL CIRCUIT

Richard W. Munroe, Millbury, Mass., assignor to Coppus Engineering Corporation, Millbury, Mass.

Filed Nov. 27, 1990, Ser. No. 618,486

Int. Cl.[5] H05B *1/02*

U.S. Cl. 219—496 **3 Claims**

1. An air heater comprising:

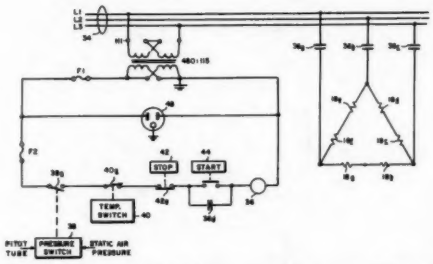
A. a hollow housing having an air inlet end and an air outlet end so as to allow air to flow therethrough;

B. means mounted within said hollow housing for generating heat in response to the presence of a heat control signal in order to heat the air flowing through said hollow housing;

C. means for sensing static air pressure exterior of said hollow housing and the velocity pressure of air flowing through said hollow housing;

D. means for sensing the temperature of a portion of said hollow housing;

E. means responsive to both:



(i) a predetermined minimum sensed pressure differential between said static air pressure and said air velocity pressure; and

(ii) any temperature lower than a predetermined maximum sensed temperature of the portion of said hollow housing;

for producing said heat control signal; and

F. means for applying said heat control signal to said heat generating means.

5,083,012

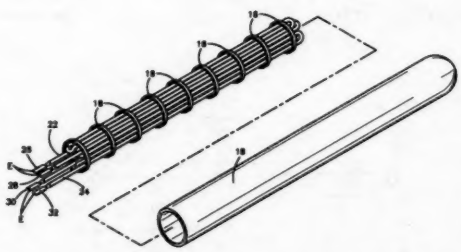
RESISTANCE WIRE HEATING ELEMENT

Robert H. Edwards, Livingston County, Mich., assignor to Custom Electric Manufacturing Company, Livonia, Mich.

Filed May 30, 1990, Ser. No. 530,832

Int. Cl.[5] H05B *3/10*

U.S. Cl. 219—553 **7 Claims**

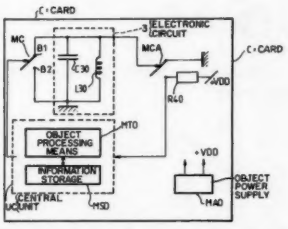


1. A single heating element for use in an electrically heated furnace, which furnace has a gas atmosphere and a given operating temperature, said element comprising a plurality of heating resistance wires or rods, said wires being connected in parallel to form said heating element having a multiplicity of parallel circuits disposed in a common tube protecting the wires from the atmosphere of the furnace, said heating resistance wires being connectable in parallel to a preselected given voltage source, each of the resistance wires having a watt density defined as watts per square area, and wherein each wire has a maximum safe watt density at said given operating temperature, said wires being selected to be of a wire size and wire length such that the watt density of each of said wires forming each circuit is less than the maximum safe watt density of the wire at the furnace operating temperature and wherein a single circuit would require a wire which exceeds the maximum safe watt density.

5,083,013
SYSTEM FOR REMOTE INFORMATION INTERCHANGE BETWEEN A PORTABLE OBJECT AND A STATION

Philippe Levionnais, Caen, France, assignor to Etat Francais, Ministre des Postes, des Télécommunications et de l'Espace (Centre National D'Etudes Des Telecommunications), Issy-Les Moulineaux, France

Filed Dec. 18, 1989, Ser. No. 452,633
Claims priority, application France, Dec. 16, 1988, 88 16672
Int. Cl.[5] G06K *7/08*
U.S. Cl. 235—449 **28 Claims**



1. A system for remote information interchange between a portable object and a station, the system comprising:

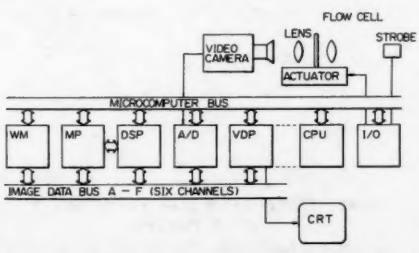
at the station: both an oscillator including a feedback loop having a station inductor element therein and suitable for conferring a working frequency thereto which is variable relative to a rest frequency; and also station processor means connected to the oscillator and capable of processing variations in the working frequency; and

at the portable object: both an electronic circuit which is switchable between an inactive state and an active state in which it constitutes a resonant circuit tuned to a frequency different from said rest frequency while remaining suitable for inductive coupling with the feedback loop at said rest frequency; and also object processor means capable of switching the electronic circuit as a function of the information to be transmitted to the station, with the variations in the working frequency of the oscillator induced by such switching enabling the station processor means to deduce said information.

5,083,014
AUTOMATIC FOCAL-POINT ADJUSTMENT METHOD IN FLOW IMAGING CYTOMETER

Tokihiro Kosaka, Hyogo, Japan, assignor to TOA Medical Electronics Co., Ltd., Kobe, Japan

Filed Dec. 26, 1990, Ser. No. 633,783
Claims priority, application Japan, Jul. 24, 1990, 2-195934
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—201.7 **6 Claims**



1. In a flow imaging cytometer in which a specimen solution containing particle components is made to flow while sheathed by a sheathing liquid through a flat flow passageway of a flow cell, still images of the specimen solution are captured by light irradiating means and image pick-up means arranged on opposite sides of the flow cell, and analysis of particle components contained in the specimen solution is performed by image processing, a focal-point adjustment method comprising the steps of:

introducing a control solution, which contains particles of uniform dimensions and shape, to the flow cell;

capturing still images of the control solution while moving a component of an optical measuring system such as the flow cell;

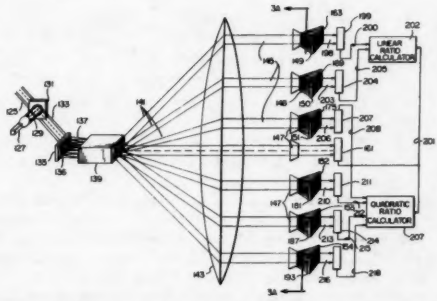
calculating evaluation parameters which represent the definition of the still images; and

performing focal-point adjustment with respect to specimen flow by adjusting the position of said component in such a manner that a value of an evaluation parameter is maximized.

5,083,015
OPTICAL CENTROID PROCESSOR WAVEFRONT SENSOR

Carl G. Witthoft, Acton; Allan Wirth, Bedford, and Lawrence Schmutz, Watertown, all of Mass., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 16, 1990, Ser. No. 623,834
Int. Cl.[5] H01J *40/00*
U.S. Cl. 250—201.9 **17 Claims**



1. An optical centroid processor wavefront sensor, for detecting the wavefront of a beam of light comprising:

reference means for providing a reference signal indicative of the intensity of the light in the beam;

first mask means for filtering the beam of light, having a pair of directional axes, a first one of said axes orientated in a predetermined manner with a second one of said axes, and having a coarse mask function, said coarse mask function being coarse monotonic dependant on light intensity on spot displacement;

second mask means for filtering the beam of light, having said pair of directional axes, and having a fine mask function, said fine mask function being fine non-monotonic dependant on light intensity on spot displacement;

first detector means, responsive to said first mask means, for providing a coarse signal indicative of light intensity associated with said coarse mask function, for each of said directional axes;

second detector means, responsive to said second mask means, for providing a fine signal indicative of light intensity associated with said fine mask functions, for each of said directional axes;

first calculator means, in accordance with a first predetermined algorithm, for calculating a coarse ratio of said coarse signal and said reference signal, for each of said directional axes, to produce an coarse output signal representative of spot displacement, said output signal adapted to drive an input of a deformable mirror;

second calculator means, in accordance with a second predetermined algorithm, for calculating a fine ratio of said

fine signal and said reference signal, for each of said directional axes, to produce an fine output signal representative of spot displacement, said output signal adapted to drive an input of a deformable mirror; and

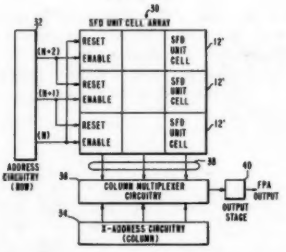
directing means for directing the beam of light onto said reference means, said first mask means, and said second mask means.

5,083,016

3-TRANSISTOR SOURCE FOLLOWER-PER-DETECTOR UNIT CELL FOR 2-DIMENSIONAL FOCAL PLANE ARRAYS

Richard H. Wyles, Cardiff, and David Madajian, Carlsbad, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 27, 1990, Ser. No. 500,819
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **17 Claims**



1. A readout unit cell circuit for coupling to a radiation detector, comprising:

a node having a capacitance associated therewith, the node being coupled to a radiation detector for storing charge generated by the detector;

first switching means coupled to the node and responsive to an assertion of an enabling signal for periodically impressing an electrical signal onto an output signal line, the electrical signal having a magnitude that is a function of the charge stored by the capacitance; and

second switching means coupled to the node for periodically resetting the node to a predetermined signal level; wherein

the unit cell is one of a plurality of unit cells organized into at least two groups, wherein each group contains a plurality of unit cells that are each coupled in common to an associated enabling signal, and wherein the second switching means is coupled to and is responsive to the assertion of an enabling signal associated with another group of unit cells.

5,083,017

X-RAY IMAGE INTENSIFIER WITH UNITARY PLATE INPUT PHOSPHOR SCREEN

Hidero Anno, Ootawara, and Katsuhiro Ono, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

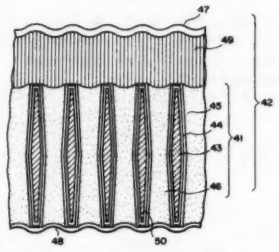
Filed Dec. 1, 1989, Ser. No. 444,795
Claims priority, application Japan, Dec. 2, 1988, 63-305785
Int. Cl.[5] H01J *31/50*
U.S. Cl. 250—213 VT **8 Claims**

1. An X-ray image intensifier comprising:

an input phosphor screen for converting an incident X-ray image into a fluorescent image,

the input phosphor screen including a glass substrate in the form of a unitary plate, having a large number of holes with a predetermined maximum inner diameter and depth, respectively, and a fluorescent material filling the small holes, a ratio of the maximum inner diameter to the depth of each of the small holes being set to be not more than 0.5;

a photoelectric screen for converting the fluorescent image into a photoelectric image formed on the input phosphor screen; and



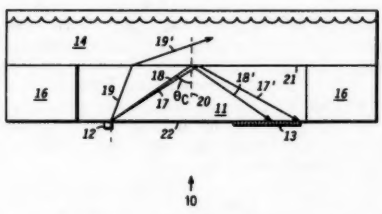
an output screen for converting photoelectric image into the fluorescent image.

5,083,018

FLUID INDEX OF REFRACTION SENSOR

George W. Rhyne, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 11, 1990, Ser. No. 550,934
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.25 **12 Claims**



1. An index of refraction sensor comprising: a transparent block having upper and lower surfaces and an index of refraction n_w, wherein the upper surface is exposed to a material having an index of refraction n_f, wherein n_f is less than n_w; a light emitting device mounted on the lower surface; and a first array of light detecting devices mounted on the lower surface parallel to the lower surface and spaced from the light emitting device by a predetermined separation, wherein light detecting devices nearest the light emitting device are smaller than light detecting devices farthest from the light emitting device.

5,083,019

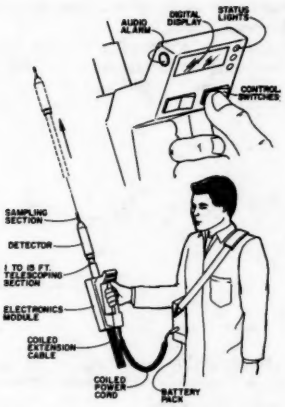
PRECONCENTRATOR FOR ION MOBILITY SPECTROMETER

Glenn E. Spangler, Lutherville, Md., assignor to Environmental Technologies Group, Inc., Baltimore, Md.

Filed Aug. 21, 1990, Ser. No. 571,172
Int. Cl.[5] B01D *59/44*; H01J *49/00*
U.S. Cl. 250—286 **30 Claims**

1. An apparatus for increasing the sensitivity of an ion mobil-

ity spectrometer to trace chemical vapors in a gaseous sample comprising a means for collecting said vapors from said gaseous sample, and a means for desorbing said vapors within a reaction region of said ion mobility spectrometer.



5,083,020

MASS SPECTROMETER

Sadao Takahashi, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

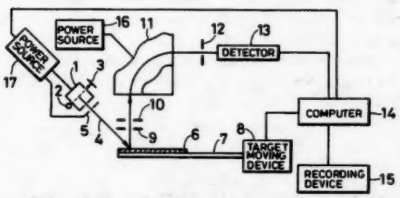
PCT No. PCT/JP86/00439, § 371 Date Apr. 30, 1987, § 102(e) Date Apr. 30, 1987, PCT Pub. No. WO87/01452, PCT Pub. Date Mar. 12, 1987

PCT Filed Aug. 27, 1986, Ser. No. 53,368

Claims priority, application Japan, Aug. 29, 1985, 60-190377

Int. Cl.[5] H01V *49/04*

U.S. Cl. 250—288 **4 Claims**



1. A mass spectrometer comprising:

means for generating a primary beam;

means for applying an acceleration voltage which accelerates said primary beam so that the accelerated primary beam is directed toward a first predetermined position;

means for holding a target which carries sample components;

means for moving said target so that each of the sample component is moved in seriatim to said first predetermined position, said moving means so controlling the movement of said target that said sample components pass said first predetermined position at a first predetermined speed, and that the portions other than said sample components on the target pass said first predetermined position at a second predetermined speed which is faster than said first predetermined speed;

means for subjecting ions to mass dispersion, the ions being produced when the sample components are bombarded by said primary beam at said first predetermined position;

means for effecting mass number sweeping so that ions that are subjected to the mass dispersion and have various mass numbers pass a second predetermined position;

means for detecting ions which have passed said second predetermined position; and

means for interrupting said primary beam to prevent said primary beam from bombarding portions between adjacent sample components on said target when said portions pass said first predetermined position.

5,083,021

MASS SPECTROMETER WITH QUADRUPOLE FILTER AND MOVABLE CARRIER PROVIDING ACCESS TO THE ION SOURCE

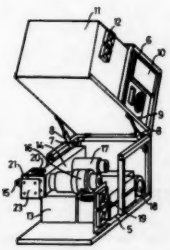
Gérard Devant, Paris, and Olivier Maulat, Sannois, both of France, assignors to Societe Nouvelle Nermag, Suresnes, France

Filed Jan. 22, 1991, Ser. No. 644,958

Claims priority, application France, Jan. 26, 1990, 90 00950

Int. Cl.[5] H01J *49/00*; G01N *27/62*

U.S. Cl. 250—292 **18 Claims**



1. A mass spectrometer with quadrupole filter comprising, within a frame closed by a casing, a spectrometer chamber which is intended to contain the ion source and its associated electron optical system, and a quadrupole filter, wherein the spectrometer chamber is designed in the form of a hollow sleeve closed at one end by a removable leak-tight cover mounted on a longitudinally-sliding motor-driven carriage which also supports the ion source and its optical system, the carriage being capable of selective displacement in translational motion between a closed position in which the ion source is in the work position and said cover is in the closed position, and an open position in which the carriage projects outside the casing at least to a partial extent and allows access to the ion source and its associated optical system.

5,083,022

SCANNING TUNNELING MICROSCOPE

Hirofumi Miyamoto; Tsugiko Takase; Takao Okada; Shuzo Mishima, and Hiroko Ohta, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1990, Ser. No. 589,491

Claims priority, application Japan, Oct. 2, 1989, 1-257521; May 14, 1990, 2-134837

Int. Cl.[5] H01J *37/00*

U.S. Cl. 250—306 **13 Claims**

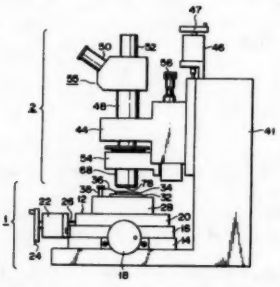
1. A scanning tunneling microscope for observing a surface of an object, said microscope comprising:

an optical system, including an objective lens, for optically observing the surface of the object, the optical system having an optical axis;

first rough movement means for supporting the objective lens and for moving the objective lens along the optical axis of the optical system;

a probe unit including a probe for detecting a tunnel current, an optically transparent member for supporting the probe

along the optical axis, and a piezoelectric driving body for causing the probe to scan the surface of the object; and



second rough movement means for supporting the probe unit, and including driving means for moving said probe unit along the optical axis of the optical system.

5,083,023

COMPOSITE LIGHT SOURCE UNIT AND SCANNING DEVICE

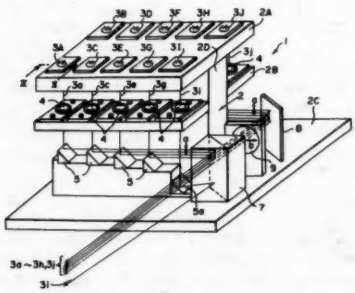
Ichirou Miyagawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 15, 1989, Ser. No. 408,005

Claims priority, application Japan, Sep. 16, 1988, 63-231841; Sep. 16, 1988, 63-231842

Int. Cl.[5] A61B *6/00*; G01N *23/04*

U.S. Cl. 250—327.2 **21 Claims**



1. A composite light source unit comprising:

(i) a housing;

(ii) a plurality of semiconductor lasers disposed in said housing;

(iii) a plurality of collimator optical systems disposed respectively in the paths of laser beams generated respectively from said semiconductor lasers, for converting the laser beams to parallel laser beams, respectively; and

(iv) a combining optical system for combining the laser beams, except a single laser beam, as a group of laser beams having close, parallel optical axes, respectively, extending in a direction different from the direction of said single laser beam, whereby said single laser beam and the group of laser beams are emitted from the housing in different directions.

5,083,024

DIGITAL X-RAY IMAGE READ APPARATUS WITH A CORRECTION FUNCTION

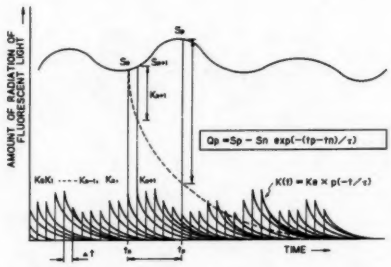
Shiro Takeda, Sagamihara; Fumihiro Namiki, Machida, and Isamu Yamada, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 2, 1990, Ser. No. 591,805

Claims priority, application Japan, Oct. 2, 1989, 1-255265

Int. Cl.[5] G01N *23/04*

U.S. Cl. 250—327.2 **2 Claims**



1. A digital X-ray image read apparatus with a correction function, comprising:

an excitation beam generation source for irradiating an excitation beam onto a photostimulable phosphor plate to generate a florescent light;

collection means for collecting the florescent light from said photostimulable phosphor plate after excitation;

photomultipler means, connected to said collection means, for converting the fluorescent light to an analog electrical signal after multiplication;

an analog-to-digital converter, operatively connected to said photomultipler means, for converting the analog electrical signal to a digital X-ray image signal;

correction means, operatively connected to said analog-to-digital converter, for correcting the digital X-ray image based on a multiplicative predetermined formula obtained from an amount of the fluorescent light and an afterglow thereof; and

image storage means, operatively connected to said correction means, for storing the X-ray image after correction.

5,083,025

PASSIVE INFRARED MOTION INDICATOR

Lothar Blomberg, Neuenrade, Fed. Rep. of Germany, assignor to Asea Brown Boveri Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed Dec. 24, 1990, Ser. No. 633,277

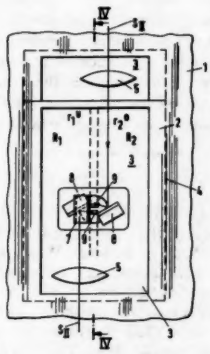
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1989, 3942830

Int. Cl.[5] G01J *5/08*

U.S. Cl. 250—353 **8 Claims**

1. Passive infrared motion indicator installed at a distance above the ground, comprising a housing having at least one housing recess formed therein, a Fresnel lens system being disposed in said at least one housing recess, at least one infrared sensor disposed inside said housing, said Fresnel lens system having Fresnel lenses onto which frontally arriving first infrared rays with a horizontal main ray are directed from a first detection area and deflected onto said infrared sensor and Fresnel lenses onto which laterally arriving second infrared rays with a horizontal main ray are directed from a second detection area and reflected onto said infrared sensor, and at least one deviation mirror surface tilted above the horizontal main rays of the first and second infrared rays for intermedi-

ately deflecting third infrared rays arriving from a third detection area disposed below the passive infrared motion indicator



between the ground and the first and second detection areas, onto said infrared sensor.

5,083,026

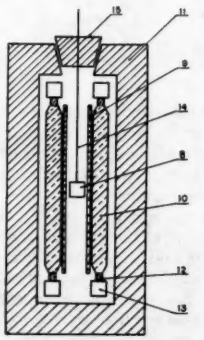
METHOD, APPARATUS AND APPLICATIONS OF THE QUANTITATION OF MULTIPLE GAMMA-PHOTON PRODUCING ISOTOPES WITH INCREASED SENSITIVITY

Danev Elbaum, Box 450, Awosting Rd., Pine Bush, N.Y. 12566

Filed Feb. 12, 1990, Ser. No. 478,945

Int. Cl.[5] G01T *1/178, 1/202*

U.S. Cl. 250—369 **30 Claims**



1. In the method of quantitating a sample of a known radioisotope decaying with production of multiple gamma-photons, the improvement in background rejection achieved by characterizing candidate decay events with at least three gamma detectors and rejecting candidate events distinguished from those of the said radioisotope through failure of at least one of the following criteria:

a. the coincident detection of the candidate gamma-photons;

b. having the detected energies and total energy deposition attributable to the said isotope;

c. having an angular distribution of energies in detectors attributable to said gamma-photons of the said isotope.

5,083,027

APPARATUS FOR AND METHOD OF MEASURING ELECTRONS

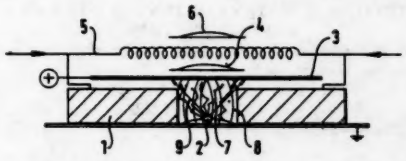
Othmar Kuhn, Wohlen, Switzerland, assignor to Inotech AG, Wohlen, Switzerland

Filed Jun. 28, 1990, Ser. No. 545,394

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1989, 3921377

Int. Cl.[5] G01T *1/29*

U.S. Cl. 250—374 **12 Claims**



1. Apparatus for measuring the intensity of radioactive beams on surfaces which comprises: a grounded plate comprising means for supporting a radioactive testpiece; a receiving chamber adjacent the grounded plate and shaped so as to receive a testpiece; an anode disposed so as to pass over the testpiece and chamber at a spacing therefrom; and means for applying a high tension between the anode and the plate to produce field lines therebetween; whereby electrons are attracted by the anode along the field lines.

5,083,028

INDIVIDUAL MEASURING DEVICE FOR THE NEUTRON DOSE EQUIVALENT

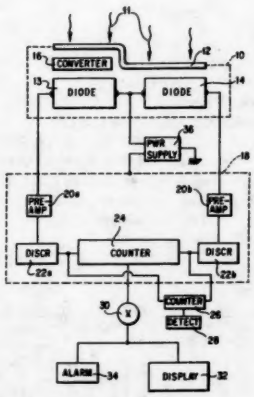
Jean-Louis Decossas, Oradour Sur Glane; Jean-Claude Vareille, Saint Victurnien; Jean Barthe, and Guy Portal, both of Massy, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Apr. 3, 1990, Ser. No. 505,665

Claims priority, application France, Apr. 5, 1989, 89 04469

Int. Cl.[5] G01T *3/08*

U.S. Cl. 250—390.03 **16 Claims**

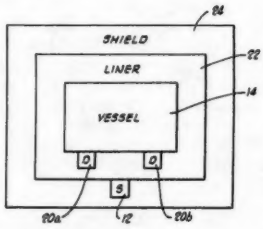


1. Individual device for measuring the neutron dose equivalent comprising:

(A) a detector having a first diode, a second diode identical to the first diode, the two diodes being juxtaposed, a converter for converting neutrons into charged particles covering the first diode and a neutron-transparent screen covering the converter and the second diode, said screen protecting the converter and the second diode from charged particles coming from the exterior of the detector,

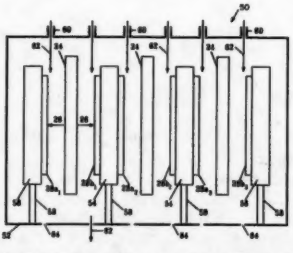
(B) a differential system connected to the two diodes and supplying as an output a digital differential signal which has a value substantially proportional to the dose equivalent due to the neutrons having penetrated the converter,
(C) a multiplier connected to the output of the differential system and which multiples the differential signal by a determined coefficient and which supplies as an output a digital signal representing the dose equivalent and
(D) an electric power supply.

5,083,029
MEASURING WATER CONTENT BY NEUTRON THERMALIZATION
Ronnie J. Buchanan, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed Feb. 4, 1991, Ser. No. 650,370
Int. Cl.[5] G01N *23/222*
U.S. Cl. 250—390.05 **15 Claims**



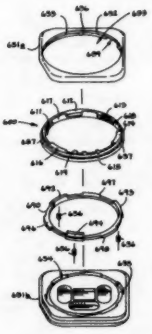
1. An apparatus for measuring water content of a substance, comprising:
a vessel for receiving the substance;
sensor means for sensing thermalized neutrons;
a thermal neutron absorber disposed around said vessel and said sensor means;
means for emitting fast neutrons through said thermal neutron absorber into said vessel; and
a biological shield encasing said sensor means, said thermal neutron absorber, and said means for emitting and extending around said vessel.

5,083,030
DOUBLE-SIDED RADIATION-ASSISTED PROCESSING APPARATUS
Vladimir Stavov, Redwood City, Calif., assignor to Applied Photonics Research, Menlo Park, Calif.
Continuation of Ser. No. 555,803, Jul. 18, 1990, which is a continuation of Ser. No. 431,704, Nov. 1, 1989, abandoned, which is a continuation of Ser. No. 132,261, Dec. 14, 1987, abandoned. This application Mar. 12, 1991, Ser. No. 668,734
Int. Cl.[5] G01N *21/00*
U.S. Cl. 250—453.1 **26 Claims**



1. A double-sided processing apparatus for processing first and second planar substrates, each planar substrate having an area, comprising:
support means for supporting said first and second planar substrates so that the planes of said substrates are substantially parallel; and
planar radiation means, provided between and substantially parallel to said first and second substrates, for emitting radiation which uniformly irradiates each of said first and second substrates with radiation having an intensity I_0 so that processing using a radiation intensity of approximately $2I_0$ is performed without the aid of reflectors, said planar radiation means having an area greater than the area of any one of said first and second planar substrates.

5,083,031
RADIATION DOSIMETERS
James W. Hoelsher; Joel E. Hegland; Peter F. Braunlich, and Wolfgang Tetzlaff, all of Pullman, Wash., assignors to International Sensor Technology, Inc., Pullman, Wash.
Continuation-in-part of Ser. No. 897,992, Aug. 19, 1986, Pat. No. 4,825,084, and a continuation-in-part of Ser. No. 882,953, Jul. 7, 1986, Pat. No. 4,839,518, which is a continuation-in-part of Ser. No. 652,829, Sep. 20, 1984, Pat. No. 4,638,163, which is a continuation-in-part of Ser. No. 336,015, Apr. 10, 1989, Pat. No. 5,015,855. This application Apr. 24, 1989, Ser. No. 343,000 The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.
Int. Cl.[5] G01T *1/11*
U.S. Cl. 250—484.1 **54 Claims**



1. A radiation dosimeter badge having at least a first part and a second part; at least one of said parts including a dosimeter holder for holding at least one luminescent dosimeter; said first and second parts being controllably detachable using a rotatable mechanical connection;
a tamper-resistance means to controllably resist unauthorized detachment of the first and second parts of the dosimeter badge; said tamper-resistance means including a tamper ring which engages to resist movement of a rotatable locking ring which is movable to controllably restrain the second and first parts of the dosimeter badge.

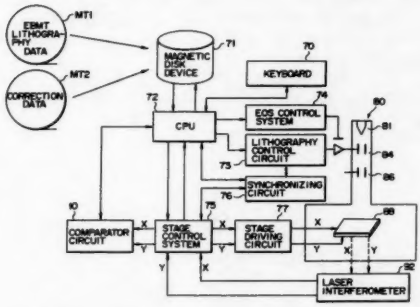
5,083,032
ELECTRON BEAM EXPOSURE APPARATUS
Toshiyuki Suzuki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Feb. 21, 1991, Ser. No. 658,656
Claims priority, application Japan, Feb. 21, 1990, 2-40330
Int. Cl.[5] H01J *37/304*
U.S. Cl. 250—492.2 **9 Claims**

1. An electron beam exposure apparatus comprising:
memory means for storing lithography data used to lithograph a mask pattern, said lithography data containing addresses specifying lithography position and data corre-

sponding to a beam current for lithographing the mask pattern;

supply means for supplying correction data for correcting said lithography data, said correction data containing X-Y coordinates of addresses specifying the correction position of the mask pattern and data corresponding to a beam current for correcting the mask pattern;

exposure means for emitting electron beam on to the mask according to the lithography data;



detecting means for detecting X-Y coordinates of the pattern on the mask exposed by said exposure means;

comparator mean for comparing the X-Y coordinates of the pattern addresses contained in said correction data and the X-Y coordinates detected by said detecting means; and

control means for controlling the magnitude of beam current in said exposure means based on the data corresponding to the beam current contained in said correction data when said comparator detects the coincidence of the two separate X-Y coordinates.

5,083,033

METHOD OF DEPOSITING AN INSULATING FILM AND A FOCUSING ION BEAM APPARATUS

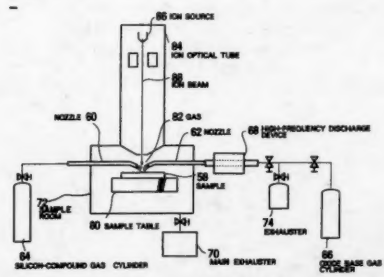
Haruki Komano; Toshihiko Hamasaki, both of Yokohama, and Tadahiro Takigawa, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 28, 1990, Ser. No. 500,302

Claims priority, application Japan, Mar. 31, 1989, 1-786609; Aug. 23, 1989, 1-214864; Dec. 12, 1989, 1-320638

Int. Cl.[5] H01J *37/30*

U.S. Cl. 250—492.2 **22 Claims**



1. A method of depositing an insulating film on the surface of a sample, comprising:

a step of supplying a first gas consisting of a silicon compound selected from the group consisting of tetramethoxysilane, tetraethoxysilane, tetramethylsilane, and dimethoxydimethylsilane, hexamethyldisiloxane, and mixtures thereof onto the surface of the sample placed in a vacuum environment;

a step of supplying a second gas predominatly comprising an element other than silicon onto the surface of the sample; and

a step of depositing a silicon compound insulating film on the surface of the sample by reaction of the first gas and the second gas generated from irradiating an ion beam obtained from an ion source including an element for composing the insulating film onto the surface of the sample.

5,083,034

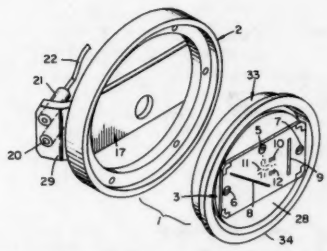
MULTI-WAVELENGTH TARGET SYSTEM

Jack D. Frank, Long Beach, and Gustav Hubert, San Gabriel, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 12, 1990, Ser. No. 478,892

Int. Cl.[5] F21S *3/14*

U.S. Cl. 250—494.1 **16 Claims**



1. A multi-wavelength target system comprising:

a single target pattern having at least one far infrared test target, at least one near infrared test target, and at least one visible light target;

heatings means coupled to said single target test pattern; and

light illumination means having near infrared and visible light sources coupled to said single target test pattern,

said far infrared test target for receiving infrared energy to emit a far infrared test pattern, said near infrared test target for receiving light to emit a near infrared test pattern, and said visible light test target for receiving light to emit a visible light test pattern.

5,083,035

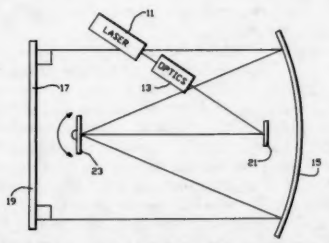
POSITION LOCATION IN SURFACE SCANNING USING INTERVAL TIMING BETWEEN SCAN MARKS ON TEST WAFERS

Jiri Pecen, Palo Alto; Kenneth P. Gross, San Carlos; Brian Leslie, Cupertino, and George Kren, Los Altos Hills, all of Calif., assignors to Tencor Instruments, Mountain View, Calif.

Filed Jul. 17, 1990, Ser. No. 553,861

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—561 **10 Claims**



1. A method of determining the position of a scanning beam as it traverses a surface of a wafer in a path comprising:

establishing a starting first location for a scan by positioning a scan start marker near an edge of a scan path,

for a test wafer with optical marker points spaced at known locations across the wafer surface in said path, scanning the test wafer with scanning optics in a first scan and timing the beam from the scan start marker to each successive marker point, each of the marker points having a unique address,

for each marker point address, storing in a memory the elapsed time from the start marker to the marker point address so that each address has a corresponding elapsed time associated therewith,

for an unknown wafer, scanning the unknown wafer in a second scan using the same path and the sam scanning optics as said first scan and measuring the elapsed time from the scan start marker, and

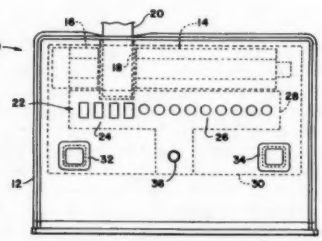
associating elapsed measured times corresponding to said stored addresses with beam position on the unknown wafer.

5,083,036

INDICATOR CIRCUIT FOR A CONCENTRATION MEASURING APPARATUS

Howard L. Beers, North Fort Myers, Fla., assignor to HF Scientific, Inc., Fort Myers, Fla.

Filed Jan. 15, 1991, Ser. No. 641,180
Int. Cl.[5] G01N *21/00*
U.S. Cl. 250—565 **17 Claims**



1. An indicator circuit for an apparatus that measures the concentration of a selected component in a test sample, said circuit comprising:

means for generating a reference voltage that represents a known concentration of said component in a reference sample and a test voltage that represents the concentration of said component in said test sample;

a range voltage divider for dividing said reference voltage into a plurality of range voltages, each of which is a function of said reference voltage and represents one of a continuous series of potential concentration ranges of said component in said test sample;

range computation means for comparing said test voltage with each of said range voltages and determining the actual concentration range of said component in said test sample;

range indicator means, responsive to said range computation means, for indicating the determined concentration range of said component;

a incremental voltage divider;

switching means for selecting an adjacent pair of said range voltages, one of which is below and the other which is at least as great as said test voltage, and applying said selected range voltages across said incremental voltage divider such that the voltage difference of said selected range voltages is divided into a series of incremental voltages, each of which represents a respective one of a series of potential incremental concentration levels of said component within each said concentration range;

incremental computation means for comparing said test voltage with each of said incremental voltages and determining the actual incremental concentration level of said component in said test sample; and

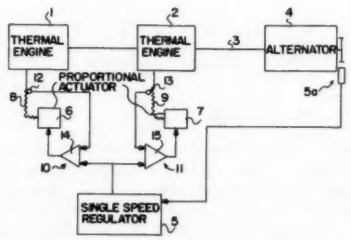
a group of incremental indicator elements, each of which represents a respective incremental concentration level within each said concentration range, said incremental indicator elements being responsive to said incremental computation means for indicating the determined incremental concentration level of said component in said test sample.

5,083,037

DEVICE FOR CONTROLLING THE OPERATION OF AT LEAST TWO THERMAL ENGINES COUPLED TO THE SAME DRIVE SHAFT OF AN ALTERNATOR

Jean-Marc Pugnet, Le Creusot, France, assignor to Framatome, Courbevoie, France

Filed Dec. 19, 1990, Ser. No. 630,169
Claims priority, application France, Dec. 19, 1989, 89 16818
Int. Cl.[5] E02C *6/00*
U.S. Cl. 290—4 R **4 Claims**



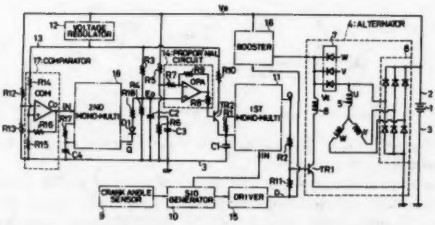
1. Device for controlling the operation of at least two thermal engines coupled to the same drive shaft of an alternator, comprising means for regulating the rotational speed of the engines and means for adjusting the position of a member controlling the injection of fuel into each engine, which are controlled in response to an output signal from the regulating means, the device further including means for the closed-loop servo-control of the position of each control member as a function of the output signal from the regulating means.

5,083,038

VEHICLE BODY VIBRATION REDUCTION CONTROL APPARATUS

Masao Fukushima, Tokyo; Kei Murakami, Zama; Shigeru Kuriyama, Katsuta; Yozo Nakamura, Ibaragi; Yuji Maeda, Katsuta; Kenichi Nakamura, Katsuta; Keiichi Mashino, Katsuta, and Yuzo Kadomukai, Ibaragi, all of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Jan. 17, 1991, Ser. No. 642,341
Claims priority, application Japan, Jan. 26, 1990, 2-14868
Int. Cl.[5] H02P *9/14*
U.S. Cl. 290—40 A **12 Claims**



1. A vehicle vibration reduction control apparatus for controlling a generator driven by an engine to charge a battery in such a way that vehicle body vibration due to the engine can be cancelled by generator vibration, which comprises:

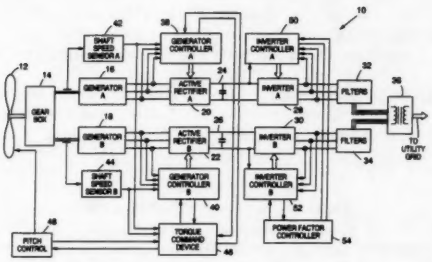
(a) means for determining a reference voltage applied to the generator to limit generator output according to battery terminal voltage;
(b) means for detecting battery voltage; and
(c) means for controlling said determining means in such a way that the reference voltage applied to the generator is reduced by a predetermined value for a predetermined period when battery voltage detected by said detecting means exceeds a predetermined voltage level.

5,083,039

VARIABLE SPEED WIND TURBINE

Robert D. Richardson, San Ramon, and William L. Erdman, Livermore, both of Calif., assignors to U.S. Windpower, Inc., Livermore, Calif.

Filed Feb. 1, 1991, Ser. No. 649,567
Int. Cl.[5] H02P *9/00*; F03D *7/00*
U.S. Cl. 290—44 **138 Claims**



1. A variable speed wind turbine comprising:
a turbine rotor including at least one blade mounted to a rotatable shaft;
a multiphase generator having a stator and a rotor coupled to the turbine shaft for rotation therewith;
a power converter including active switches operable for controlling stator electrical quantities for each phase of the generator;
torque command means associated with turbine parameter sensors for defining a torque reference signal; and
generator controller means coupled to the power converter for controlling the active switches including field orientation means responsive to the torque reference signal for defining a desired quadrature axis current in field coordinates, and switch control means for controlling the active switches to produce stator electrical quantities that correspond to the desired quadrature axis current.

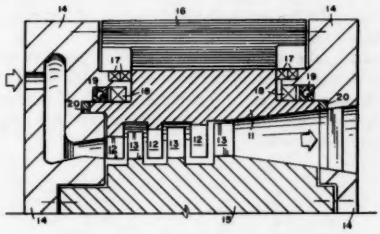
5,083,040

INTEGRATED TURBINE GENERATOR

Robert P. Whitford, Sterling, and John I. Cofer, IV, Andover, both of Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 7, 1990, Ser. No. 534,244
Int. Cl.[5] F02C *7/00*; H02K *7/00*
U.S. Cl. 290—52 **11 Claims**

1. An integrated power unit apparatus, said apparatus comprising:
a stationary central casing having circular arrays of stationary blades disposed along said central casing in an axial direction, said blades extending in a radial manner from said central casing;
a hollow, substantially cylindrical rotor including magnetic pole piece means about the outer periphery thereof, said rotor being circumferentially disposed about said central casing and said stationary blades;
said rotor including circular arrays of rotatable blades disposed along said rotor in an axial direction, said blades extending in a radial direction toward said central casing, the stationary blade arrays of said central casing and said rotatable blade arrays of said rotor being interdigitated in the axial direction;
an outer casing spaced from said central casing, said rotor



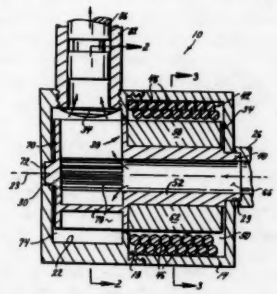
being rotatably supported therein and said arrays of blades being interdigitated in the space between said central casing and said rotor;
said outer casing further including stator windings surrounding said rotor and disposed in said outer casing.

5,083,041

THERMOMAGNETIC SAFE ARM DEVICE

Lee R. Hardt, and James E. Means, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 5, 1990, Ser. No. 461,564
Int. Cl.[5] H02K *1/02*
U.S. Cl. 290—52 **18 Claims**



10. A safe and arm device, comprising:
a thermomagnetic means for receiving a gas flow transiting there through and for capturing and converting the thermal energy of said gas to a voltage;
a means for converting said gas flow to rotational flow, said means being disposed in operative association with said means for receiving said gas flow and capturing and converting the thermal energy of said gas to a voltage; and
a means for controlling the exit of gas from said safe and arm device, said means disposed radially adjacent and affixed to said means for converting said gas flow to rotational flow.

5,083,042

UNPLUGGING APPARATUS

Roger R. Merchant, 811 9th St., St. Paul, Nebr. 68873

Filed Jul. 6, 1990, Ser. No. 549,419
Int. Cl.[5] H01R *13/635*
U.S. Cl. 307—149 **12 Claims**

1. An unplugging apparatus for removing a plug from a receptacle in response to the approach of an electrical storm, comprising:
a mechanical actuator connected to a power cord plug,

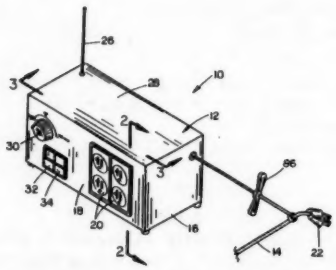
operable in response to a signal, to pull the plug from a receptacle;

a hollow housing within which at least a portion of said mechanical actuator is operably mounted;

said mechanical actuator further comprising:

pull cord means connected between said plug and an operable trigger arm, said pull cord connected for movement with said trigger arm;

said trigger arm operable between a first position, wherein the plug is connected to a receptacle, and a second position, wherein said pull cord is pulled longitudinally away from the receptacle to disconnect the plug from said receptacle;



sensing means for sensing the proximity of an electrical storm and sending a signal to said mechanical actuator to pull said plug;

said pull cord extending through an aperture in said housing, said trigger arm being located within said housing and said plug being located outside said housing; and

said mechanical actuator including a selectively operable latch means, selectively operable from a latched position restraining said trigger arm from pivotable movement, and an unlatched position permitting pivotable movement of said trigger arm.

5,083,043

VOLTAGE CONTROL CIRCUIT FOR A SEMICONDUCTOR APPARATUS CAPABLE OF CONTROLLING AN OUTPUT VOLTAGE

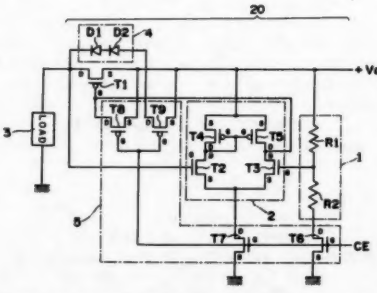
Makoto Yoshida, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 18, 1991, Ser. No. 642,898

Claims priority, application Japan, Jan. 18, 1990, 2-9527

Int. Cl.[5] H03K *3/01*

U.S. Cl. 307—296.8 **8 Claims**



1. A voltage control circuit for a semiconductor apparatus for controlling an output voltage to be applied from an external voltage source to a load circuit of said semiconductor apparatus therethrough, comprising:

reference voltage generating means for generating a predetermined reference voltage according to a source voltage outputted from an external voltage source;

comparing means for comparing said output voltage to be applied to said load circuit with said reference voltage generated by said reference voltage generating means, and outputting a comparison signal for representing said comparison result thereof;

voltage control means for controlling said output voltage to be applied to said load circuit according to said comparison signal outputted from said comparing means;

diode means for applying said source voltage outputted from said external voltage source to said load circuit in a forward direction thereof, said diode means being connected in parallel with said voltage control means;

first switching means for enabling said reference voltage generating means, said comparing means and said voltage control means in response to a first control signal outputted from an external circuit when said load circuit requires a relatively large current equal to or larger than a predetermined threshold current, and for disabling said reference voltage generating means, said comparing means and said voltage control means in response to a second control signal outputted from said external circuit when said load circuit requires a relatively small current smaller than said predetermined threshold current; and

second switching means for enabling said diode means in response to said second control signal, and for disabling said diode means in response to said first control signal.

5,083,044

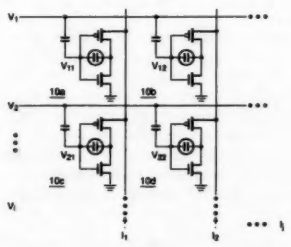
SYNAPTIC ELEMENT AND ARRAY

Carver A. Mead, Pasadena; Timothy P. Allen, Palo Alto; Federico Faggin, Los Altos Hills, and Janeen D. W. Anderson, Fremont, all of Calif., assignors to Synaptics, Incorporated, San Jose, Calif.

Continuation-in-part of Ser. No. 322,490, Mar. 10, 1989, abandoned. This application May 25, 1989, Ser. No. 357,520

Int. Cl.[5] H03K *3/42, 17/693;* **G11C** *27/02*

U.S. Cl. 307—311 **4 Claims**



1. An electronic circuit fabricated as a part of an integrated circuit, said integrated circuit having a portion containing active circuits, said portion covered by an opaque layer, including in combination:

a plurality of adaptive amplifiers arranged as an array including a plurality of columns and at least one row, each of said adaptive amplifiers having a gain of magnitude much larger than 1 and including:

an output node,

a sense node,

an inverting input node, said input node being a floating node forming the gate of at least one MOS transistor,

a first capacitor for coupling an input to said adaptive amplifier to said floating node, said first capacitor having a first electrode connected to said input to said adaptive amplifier and a second electrode connected to said floating node,

a second capacitor connected from said output node to said floating node, said second capacitor having a first

electrode connected to said output node and a second electrode connected to said floating node,

said opaque layer having an aperture therein above said second capacitor for allowing ultraviolet light to fall onto both electrodes of said second capacitor;

a voltage input line associated with each of said rows in said array, said voltage input line electrically connected to the first electrode of the first capacitor of each of said adaptive amplifiers associated with that particular row,

a current output line associated with each of said columns in said array, said current output line electrically connected to the sense nodes of each of said adaptive amplifiers associated with that particular column.

5,083,045

HIGH VOLTAGE FOLLOWER AND SENSING CIRCUIT

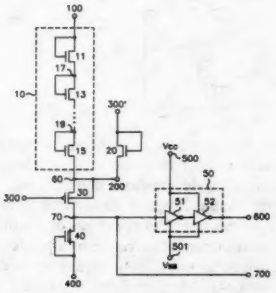
Young-Ho Yim, Daegu, and Jae-Young Do, Seoul, both of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 277,761, Nov. 30, 1988, abandoned. This application Feb. 20, 1990, Ser. No. 481,817

Claims priority, application Rep. of Korea, Nov. 30, 1987, 13611/1987

Int. Cl.[5] H03K *5/153*

U.S. Cl. 307—350 **21 Claims**



1. In a semiconductor device, a high voltage follower and sensing circuit, comprising:

an input terminal for inputting an externally applied voltage;

a controlling node;

an output node;

voltage drop means connected between said input terminal and said controlling node to drop the input voltage;

first voltage receiving means for receiving and supplying a first bias voltage to said controlling node;

switching means connected between said controlling node and said output node for providing a conducting path therefor in response to the voltage of said controlling node;

second voltage receiving means for receiving a second bias voltage; and

depletion means connected between said second voltage receiving means and said output node for enabling current flow to said output node;

whereby the input voltage equal to or exceeding a specified level of said input voltage is sensed and followed through said output node.

5,083,046

SOURCE-COUPLED FET LOGIC TYPE OUTPUT CIRCUIT

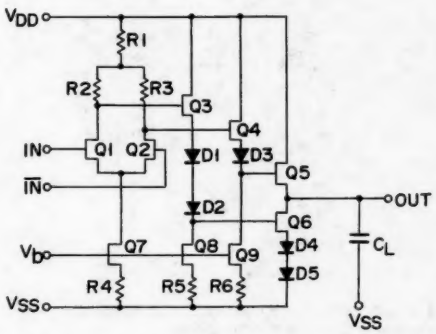
Hironori Nagasawa, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 5, 1990, Ser. No. 593,043

Claims priority, application Japan, Oct. 6, 1989, 1-261574

Int. Cl.[5] H03K *19/017, 19/0175*

U.S. Cl. 307—448 **13 Claims**



4. An output circuit comprising:

first and second load elements having one end coupled respectively to a high-voltage power source, and first and second switching means coupled respectively to first and second input terminals in a manner that a complementary signal may be input to each of the control terminals, and having current paths connected, at one end, to the other ends of said first and second load elements and connected together, at the other end;

a first constant current power source connected between the other ends of the respective current paths of said first and second switching means, and a low-voltage power supply;

a third switching means having a current path connected, at one end, to said high-voltage power source and its control terminal coupled to one end of said first switching means;

a first level shift element having one end connected to the other end of the current path of said third switching means;

a second constant-current power source coupled between the other end of said first level shift element and said low-voltage power source;

fourth switching means having a current path coupled, at one end, to said high-voltage power source, and a control terminal connected to one end of the current path of said second switching means;

a second level shift element connected, at one end, to the other end of the current path of said fourth switching means;

a third constant-current power source connected between the other end of said second level shift element and said low-voltage power source;

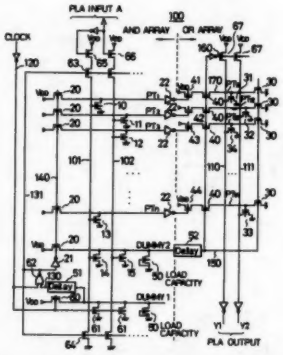
fifth switching means having a current path coupled, at one end, to said high-voltage power source, and, at the other to an output terminal, and a control terminal connected to the other end of said second level shift element; and

sixth switching means having a current path coupled, at one end, to the other end of the current path of said fifth switching means and, at the other end to said low-voltage power source, and its control terminal coupled to the other end of said first level shift element.

5,083,047
PRECHARGED-TYPE LOGIC CIRCUIT HAVING DUMMY PRECHARGE LINE

Atsushi Horie, Niiza, and Kimiyoshi Usami, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 22, 1990, Ser. No. 601,917
Claims priority, application Japan, Oct. 26, 1989, 1-277166
Int. Cl.[5] H03K *17/284*
U.S. Cl. 307—465 **11 Claims**

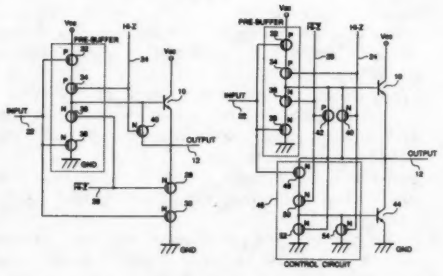


1. A precharged-type logic circuit, comprising:
a plurality of precharge lines; and
a dummy precharge line connected to a load capacitance that is the maximum or still larger as compared with load capacitances of the plurality of precharge lines, wherein a completion time of a precharge operation of the dummy precharge line is detected as a completion time of a precharge operation of the plurality of precharge lines, so that the precharge operation to the plurality of precharge lines is stopped by the state of the dummy precharge lines.

5,083,048
BIMOS TRI-STATE OUTPUT BUFFER

Masahiko Kashimura, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 14, 1990, Ser. No. 480,108
Claims priority, application Japan, Feb. 14, 1989, 1-34811
Int. Cl.[5] H03K *19/094, 19/017, 19/20, 19/003*
U.S. Cl. 307—473 **8 Claims**

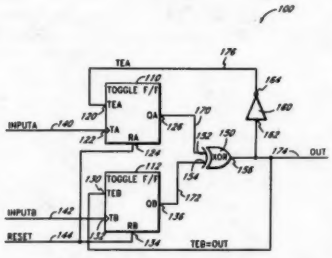


1. A tri-state output buffer which has a signal input terminal, a control terminal and a signal output terminal and is controlled by a control signal applied to the control terminal so as to be selectively put in an inactive condition maintaining the signal output terminal in a high impedance condition and in an active condition bringing the signal output terminal either into a high level or into a low level in response to a signal applied to the signal input terminal, the tri-state output buffer comprising a pre-buffer circuit having an input node connected to the signal input terminal, and an output terminal node, and controlled by the control signal applied to the control terminal so as to selectively bring the output node into a high impedance condition or into an active condition assuming either a high level or a low level in response to the signal applied to the signal input terminal, a bipolar transistor connected between a power supply voltage and a ground and having a base connected to the output node of the pre-buffer circuit and an emitter connected to the signal output terminal of the tri-state output buffer, a first switching element connected between the ground and the signal output terminal of the tri-state output buffer and controlled by the control signal applied to the control terminal so as to be selectively turned on and off, and a second switching element connected between the base of the bipolar transistor and the signal output terminal of the tri-state output buffer and controlled by the control signal applied to the control terminal so as to be turned on when the signal output terminal is brought into the high impedance condition and turned off when the signal output terminal is brought into the active condition.

5,083,049
ASYNCHRONOUS CIRCUIT WITH EDGE-TRIGGERED INPUTS

Lane O. Kagey, Costa Mesa, Calif., assignor to AST Research, Inc., Irvine, Calif.

Filed May 10, 1991, Ser. No. 698,718
Int. Cl.[5] H03L *7/06*
U.S. Cl. 307—480 **8 Claims**



1. A circuit that receives asynchronous input signals and generates an active asynchronous output signal, said circuit comprising: a first toggle flip-flop, said first toggle flip-flop having a first enable input, a first clock input, and a first output, said first output of said first toggle flip-flop changing logic states upon occurrence of a predetermined edge of a first asynchronous input signal applied to said first clock input only when enabled by a first enable signal applied to said first enable input;
a second toggle flip-flop, said second toggle flip-flop having a second enable input, a second clock input, and a second output, said second output of said second toggle flip-flop changing logic states upon occurrence of a predetermined edge of a second asynchronous input signal only applied to said second clock signal only when enabled by a second enable signal applied to said second enable input; and
a logic circuit responsive to said outputs of said flip-flops wherein said logic circuit controls the logic level of said first and second enable signals of said flip-flops such that said first flip-flop is enabled prior to occurrence of said predetermined edge of said first asynchronous input signal and disabled after occurrence of said predetermined edge of said first asynchronous input signal, and wherein said second flip-flop is disabled until occurrence of said predetermined edge of said first asynchronous input signal and enabled after occurrence of said predetermined edge of said first asynchronous input signal, said second flip-flop being subsequently disabled and said first flip-flop being enabled upon occurrence of said predetermined edge of

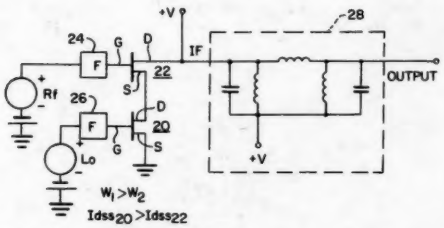
said second asynchronous input signal, wherein said logic circuit further generates said active asynchronous output signal between said predetermined edge of said first asynchronous input signal and said predetermined edge of said second asynchronous input signal.

5,083,050

MODIFIED CASCODE MIXER CIRCUIT

Carmine F. Vasile, Medford, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Nov. 30, 1990, Ser. No. 620,035
Int. Cl.[5] H03B *19/00*; H03K *3/353*
U.S. Cl. 307—529 **10 Claims**



1. A mixer circuit, comprising:

a first FET having a first signal provided as input to its gate;

a second FET having as an input to its gate a second signal, the source of the second FET being grounded, the second FET capable of having a higher saturation current than the first FET to ensure that the first FET has high gain to provide for maximum voltage and current swings at its drain;

wherein the first FET has its source connected to the drain of the second FET; and

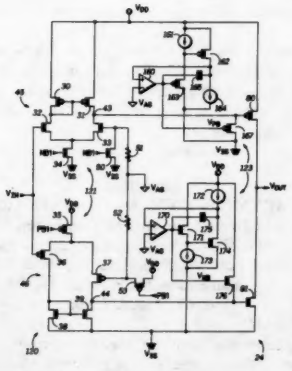
wherein the first signal is mixed with the second signal to provide an output high conversion gain signal at the drain of the first FET.

5,083,051

OUTPUT DRIVER CIRCUIT WITH IMPROVED OUTPUT STAGE BIASING

Roger A. Whatley, Georgetown, and Mathew A. Rybicki, Austin, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 26, 1990, Ser. No. 484,955
Int. Cl.[5] H03K *17/687*
U.S. Cl. 307—571 **12 Claims**



1. A driver circuit comprising:

an input stage for providing a first signal proportional to a difference between an input signal and a first reference signal, and for providing a second signal proportional to a difference between an input signal and a second reference signal;

an output stage having first and second transistors coupled in series between first and second power supply voltage terminals for respectively receiving said first and second signals and providing an output signal at a node between said first and second transistors; and

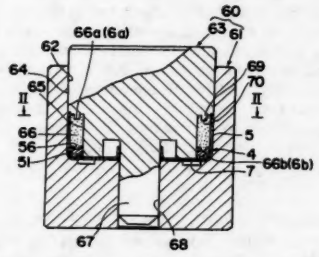
clamping means, comprising a third transistor and a regulator coupled to said third transistor, said regulator comprising a differential amplifier, for clamping said second signal at a voltage substantially equal to said second power supply voltage plus a gate-to-source voltage of said third transistor, and for biasing said third transistor to have substantially equal current density as said second transistor when said output signal equals a third reference voltage, said regulator regulating a voltage at a drain of said third transistor so that said third transistor has substantially equal drain-to-source voltage as said second transistor when said output signal equals said third reference voltage.

5,083,052

ELECTRIC FAN MOTOR AND A METHOD FOR PRODUCING THE SAME

Joji Ochi, Misima, Japan, assignor to Daikin Industries, Ltd., Osaka, Japan

Filed Oct. 1, 1990, Ser. No. 590,968
Claims priority, application Japan, Oct. 2, 1989, 1-258413
Int. Cl.[5] H02K *15/12*, *9/06*, *15/03*
U.S. Cl. 310—64 **13 Claims**



1. A method for producing an electric motor wherein a casing made of a magnetic material for a part of the motor selected from the group consisting of a rotor or a stator, includes a mounting area perpendicularly intersecting a rotary shaft, and a cylindrical portion axially extending from an outer edge of the mounting area, and wherein an annular permanent magnet is circumferentially disposed along an inner circumferential surface of the cylindrical portion, comprising the steps of:

(a) pouring a mixture of magnetic power and a binder into the casing;

(b) compression-molding the mixture into an annular shape fitting the inner circumferential surface of the cylindrical portion to form a molded piece;

(c) curing the binder in the molded piece;

(d) magnetizing the molded piece to form a permanent magnet;

(e) forming a separating member composed of a nonmagnetic material for magnetically separating the mounting area from the permanent magnet;

(f) forming concave or convex engagement portions on an end face of the separating member; and

(g) mounting the separating member to the mounting area in a manner that the other end face of the separating member is in contact with the mounting area;

wherein the pouring and compression-molding steps follow the mounting step to provide an end face of the molded piece with a configuration fitting the engagement portions of the separating member.

5,083,053

HIGH-FRICTION BACK-UP BEARING FOR MAGNETIC BEARINGS

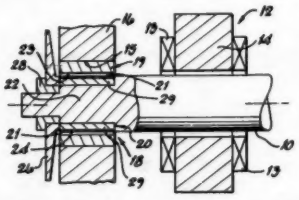
Nigel H. New, Harrow, United Kingdom, assignor to The Glacier Metal Company Limited, Great Britain

Filed Jul. 27, 1990, Ser. No. 558,497

Claims priority, application United Kingdom, Aug. 4, 1989, 8917875

Int. Cl.[5] H02K *5/16*; F16C *39/06*

U.S. Cl. 310—90.5 9 Claims



1. An assembly in which a rotating shaft is to be supported by a magnetic bearing including a back-up bearing to support the shaft when the magnetic bearing fails, the back-up bearing having a first part comprising a cylindrically-shaped layer of a dry bearing material, and with a surface opposite to a wear-resistant surface portion of a second part of the back-up bearing, one such part being provided on the shaft, and the other part being provided on a stationary part of the assembly, wherein the coefficient of friction between the first and second parts is relatively high, and a remaining portion of the second part being contiguous with the wear-resistant surface portion thereof and being of a material with a high coefficient of thermal conductivity, and in the operation of the assembly, the clearance between the opposing surfaces of the back-up bearing being arranged to be less than the clearance between the rotating shaft and the magnetic bearing.

5,083,054

PERMANENT MAGNET FIELD TYPE DC MACHINE

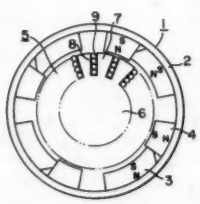
Tosio Tomite; Keiichi Nakatsugawa, both of Katsuta, and Toshimi Abukawa, Hitachiota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 10, 1983, Ser. No. 550,585

Claims priority, application Japan, Nov. 13, 1982, 57-199228

Int. Cl.[5] H02K *21/26*

U.S. Cl. 310—154 11 Claims



1. A permanent magnet field type DC machine comprising:

a plurality of spaced permanent magnet members fixed to the inner peripheral surface of a cylindrical yoke so that said permanent magnet members oppose an armature core with a narrow gap therebetween, each of said permanent magnet members being magnetized in a pole direction of a radius of said armature core; and

auxiliary magnetic pole members disposed only adjacent to portions of said permanent magnet members at which flux density is increased by armature reaction, said auxiliary magnetic pole members being disposed to oppose said armature core with a gap at least narrower than said narrow gap between said permanent magnet members and said armature core for enabling increase of magnetizing effect at large load current.

5,083,055

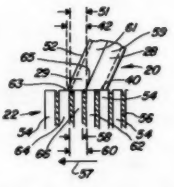
NOTCHED CARBON BRUSH FOR ROTATING ELECTRIC MACHINES

Paul R. Hokanson, Girard, Pa., assignor to General Electric Company, Erie, Pa.

Filed Dec. 17, 1990, Ser. No. 628,801

Int. Cl.[5] H02K *13/00*

U.S. Cl. 310—248 14 Claims



1. A carbon brush for use in an electric machine having a rotor and a commutator operably connected to the rotor, the commutator having a plurality of circumferential contacts each separated by an insulator having a thickness, the contacts further having a pitch defined as a circumference of the commutator divided by the number of contacts in the commutator, the machine further having a brush holder secured to the machine, a channel in the holder for slidably positioning the brush relative to the commutator, and a spring for urging the brush against the commutator, the brush including at least one wafer, having a trailing wafer comprising:

a surface which is pressed against the commutator contacts by the spring as the rotor and commutator rotate,

a leading edge of the surface being in electrical contact with succeeding contacts as the commutator rotates,

a trailing edge of the surface being in electrical contact with succeeding contacts as the commutator rotates,

the surface having a first angular thickness between the trailing edge and the leading edge, and a reduced portion having a second-angular thickness between the trailing edge and the leading edge, the second thickness being less than the first thickness,

the reduced portion being formed by a notch in the trailing edge,

the first angular thickness being greater than the sum of a selected number of pitches plus a thickness of one insulator, and the second angular thickness being less than the sum of a selected number of pitches plus the thickness of one insulator.

5,083,056

DISPLACEMENT GENERATING APPARATUS

Yuu Kondou, and Tomio Ono, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 14, 1990, Ser. No. 480,007

Claims priority, application Japan, Mar. 14, 1989, 1-61635

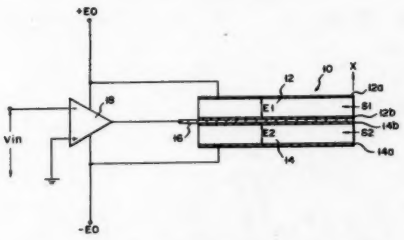
Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—332 5 Claims

1. A displacement generating apparatus comprising:

an electrostriction actuator of a bimorph structure having two electrostriction boards stacked in layers, said actuator including an inside electrode disposed between the two electrostriction boards and two outside electrodes arranged outside the electrostriction boards; and

means for supplying a variable driving voltage to the electrostriction actuator, said supply means supplying the driving voltage to the inside electrode, applying a constant voltage not lower than the maximum value of the driving voltage to one of the outside electrodes, and ap-



plying a constant voltage not higher than the minimum value of the driving voltage to the other outside electrodes;

wherein said electrostriction boards produce a positive displacement with respect to an applied voltage of either polarity.

5,083,057

PANEL OF COLOR CATHODE RAY TUBE

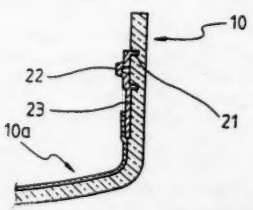
Min S. Kim, Suwon, Rep. of Korea, assignor to SamSung Electron Devices Co., Ltd., Kyunggi, Rep. of Korea

Filed Oct. 27, 1989, Ser. No. 427,514

Claims priority, application Rep. of Korea, Oct. 29, 1988, 88-17637

Int. Cl.[5] H01J *29/07*

U.S. Cl. 313—479 **1 Claim**



1. A panel of a color cathode ray tube, comprising:

an aluminum coating layer formed on the inner face of said panel; and

two or more monolithic stud pins installed on the inside of a skirt portion of the panel, each of said stud pins being provided with a protruding portion engaging an area on the inner face not covered by said aluminum coating layer and with an extended portion unitary with said protruding portion and extending between said protruding portion and a said aluminum coating layer, so that said aluminum coating layer engages said extended portion.

5,083,058

FLAT PANEL DISPLAY DEVICE

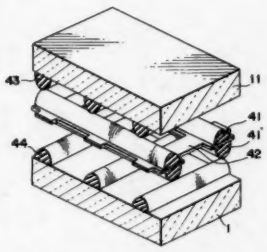
Kinzo Nonomura, Ikoma; Satoshi Kitao, Kyoto; Ryuichi Murai, Katano; Jumpei Hashiguchi, Neyagawa; Kiyoshi Hamada, Sakai, and Masayuki Takahashi, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 18, 1990, Ser. No. 539,742

Claims priority, application Japan, Jun. 19, 1989, 1-156536; Jul. 17, 1989, 1-184094

Int. Cl.[5] H01J *31/00*

U.S. Cl. 313—482 **15 Claims**



1. A flat panel display device comprising:

a face plate made of transparent material;

a back plate positioned parallel to said face plate;

a wall member extending between said face plate and back plate around the perimeter thereof to define an airtight housing:

a beam control layer inserted between said face plate and back plate;

an anode provided on an inner surface of said face plate;

a fluorescent layer provided in association with said anode;

a cathode provided in association with an inner surface of said back plate; and

a plurality of struts, comprised of electrically conductive screen printed powdery material, tightly held between said beam control layer and face plate;

wherein said struts include first struts provided on said beam control layer extending parallel to each other in a first direction and spaced a predetermined pitch, and second struts provided on said face plate extending parallel to each other in a second direction perpendicular to said first direction and spaced a predetermined pitch, so that said struts are held in contact crossingly with each other at their tips;

whereby an electric charge accumulated between said anode and beam control layer is discharged by a leakage current flowing through said struts.

5,083,059

ELECTRODE FOR METAL HALIDE DISCHARGE LAMP

Timothy W. Graham, Union Springs, and John Scoins, Skaneateles, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

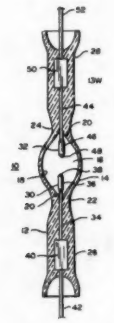
Filed Dec. 31, 1990, Ser. No. 636,743

Int. Cl.[5] H01J *17/04*

U.S. Cl. 313—631 **11 Claims**

1. A metal halide discharge lamp in a power range of about 5 watts to 40 watts and having an efficacy exceeding 35 lumens per watt that comprises a quartz tube envelope of the double-ended type having a first neck and a second neck axially arranged on opposite ends of a bulb having a bulb wall that defines an arc chamber of a predetermined volume, predetermined quantities of mercury and a metal halide salt within said chamber, and first and second elongated electrodes of a refractory metal each extending axially through a respective one of the necks into said arc chamber, each of said first and second electrodes having axial tips spaced apart to define an arc gap therebetween; wherein the improvement comprises each of said first and second electrodes having a lead-in wire of diame-

ter 0.007 inches or less formed of said refractory metal supported in the quartz of the associated neck and entering the chamber and a post member composed of said refractory metal and supported on said lead-in wire out of contact with said neck and said bulb wall, each said post member being of a diameter up to about 0.014 inches and larger than its associated lead-in wire, the larger diameter post portions having a relatively large surface area in contact with the mercury and metal halide vapors in the lamp so that heat conducted away from the tips of said electrodes is predominately transferred to the vapors in the chamber, while the smaller diameter lead in wires conduct only a small amount of the heat into the respective neck portions, thereby limiting heat flow from the chamber at or near the neck portions.

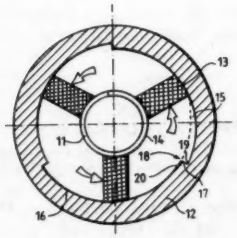


5,083,060

MICROWAVE TUBE PROVIDED WITH AT LEAST ONE AXIAL PART, FITTED COLD INTO A COAXIAL ENVELOPE

Pierre Nugues, Auneau, and Marc Bizet, Montigny le Bretonneux, both of France, assignors to Thomson Tubes Electroniques, Boulogne Billancourt, France

Filed Jul. 12, 1990, Ser. No. 551,957
Claims priority, application France, Aug. 1, 1989, 89 10361
Int. Cl.[5] H01J *25/34*
U.S. Cl. 315—3.5 **9 Claims**



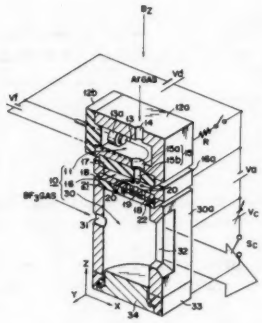
1. A microwave tube provided with at least one axial part fitted into a coaxial envelope and kept centered in the envelope by spacers placed between an external surface of the axial part and an internal surface of the envelope, wherein the external surface of the axial part and the internal surface of the envelope are shaped so that the axial part and the spacers can be freely introduced into the envelope in a first relative position of said envelope, said axial part and said spacers, so that a force clamping the spacers between the external surface of the axial part and the internal surface of the envelope is exerted during a relative rotation of at least one of said envelope, said axial part and said spacers from the first position to a second relative position of said envelope, said axial part and said spacers.

5,083,061

ELECTRON BEAM EXCITED ION SOURCE

Akira Koshiishi, Kofu, and Kohei Kawamura, Nirasaki, both of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Nov. 15, 1990, Ser. No. 614,600
Claims priority, application Japan, Nov. 20, 1989, 1-302730
Int. Cl.[5] H01J *27/02*
U.S. Cl. 315—111.81 **15 Claims**



1. An ion source for producing an ionized gas by discharge excitation using an electron beam, comprising:

a first chamber for producing a first plasma by causing electric discharge in a first gas contained in an electron-emitting region,

said first chamber including:

a main chamber having electron generating means arranged therein, and

a sub-chamber communicating with said main chamber through a nozzle;

means for supplying the first gas for a discharge into said main chamber;

electron extracting means, having only a single electrode, for extracting electrons from the first plasma;

a second chamber for producing a second plasma by discharge excitation of the extracted electrons and ionizing a second gas as a source gas; and

means for supplying the second gas into said second chamber;

said single electrode including:

a first hold, a center of which is coaxial with a center of an opening of said nozzle, for allowing the extracted electrons to pass therethrough and to move into said second chamber, and

second holes, arranged around the first hole and surrounding the first hole, for allowing part of the first gas injected from said nozzle to pass therethrough and to move into said second chamber.

5,083,062

FLASH DEVICE

Yoshiro Ichihara, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1990, Ser. No. 468,603
Claims priority, application Japan, Jan. 23, 1989, 1-013591
Int. Cl.[5] H05B *37/00*
U.S. Cl. 315—241 P **2 Claims**

1. A flash device having a DC-DC converter for boosting an output of an electric power source, a capacitor for storage of energy for flash light to be charged by an output of said DC-DC converter, and a charge voltage detecting circuit for detecting a charge voltage of said capacitor, comprising:

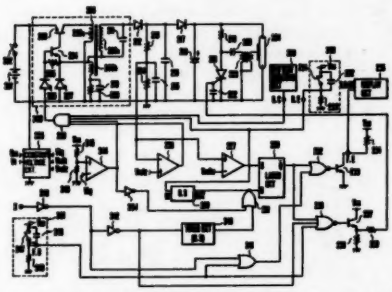
(a) a latch circuit for latching a charge completion signal output from said charge voltage detecting circuit;

(b) switch means for determining whether a charging opera-

tion of said flash device is rendered operative or inoperative;

(c) a timer circuit arranged to start operating when said flash device is rendered inoperative by said switch means; and

(d) a control circuit which causes said flash device to be



operative while maintaining the latching state of said latch circuit when the charging operation of said flash device is made operative by said switch means within the time period set by said timer circuit, and releases the latching of said latch circuit when said flash device is not made operative upon the expiration of the time period.

5,083,063

RADIATION GENERATOR CONTROL APPARATUS

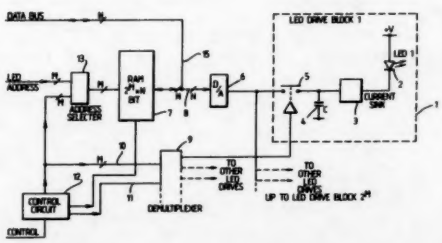
Steven D. Brooks, Hants, England, assignor to De La Rue Systems Limited, England

Filed Aug. 14, 1990, Ser. No. 567,278

Claims priority, application United Kingdom, Aug. 16, 1989, 8918718

Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—294 8 Claims



1. Radiation generator control apparatus for controlling operation of a number of radiation generator assemblies, the apparatus comprising a store for storing calibration values for respective radiation generator assemblies, a respective switch coupled to each radiation generator assembly, a digital to analogue converter connected to the output of the store and to the input of each switch, and control means for selectively addressing the store and controlling the switches in sequence so that when the switch associated with each generator assembly is closed, the corresponding calibration value is supplied to the digital to analogue converter to energize the generator assembly.

5,083,064

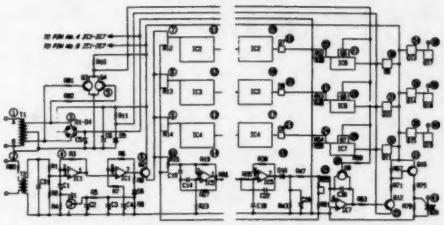
LAMP MODULATING CIRCUITRY FOR INCANDESCENT AND FLUORESCENT LAMPS

Charles W. Jones, Sr., 533 W. Cypress St., Compton, Calif. 90220

Filed Sep. 22, 1988, Ser. No. 247,720

Int. Cl.[5] A63J *17/00*

U.S. Cl. 315—294 5 Claims



1. Apparatus for generating lighting effects in response to low level audio signals, comprising:

an automatic level control circuit responsive to said low level audio signals for providing a controlled level audio signal; a plurality of active bandpass filters having different bandpass characteristics connected to receive the controlled level audio signal;

a rectifier connected to the output of each filler; an integrator connected to the output of each rectifier;

a comparator connected to the output of each integrator; means responsive to the output of each comparator for controlling current flow from an A.C. power source through a lamp; and, means for resetting each integrator, in synchronization with the A.C. power source, said resetting means including a parallel transistor network.

5,083,065

LIGHTING DEVICE FOR ELECTRIC DISCHARGE LAMP

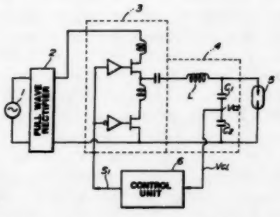
Masao Sakata; Toru Segoshi, both of Yokohama; Tohru Futami, Fujisawa, and Yoichi Iijima, Sagamihara, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 19, 1990, Ser. No. 599,929

Claims priority, application Japan, Oct. 23, 1989, 1-273705

Int. Cl.[5] H05B *41/36*

U.S. Cl. 315—307 4 Claims



1. A method of starting an electric discharge lamp bulb until the electric discharge lamp bulb assumes a predetermined discharge stable state, comprising the steps of:

supplying electric power to the electric discharge lamp bulb;

detecting a terminal voltage across the electric discharge lamp bulb;

determining whether said terminal voltage is greater than a predetermined value;

increasing a frequency of said electric power by a first frequency value when it is determined that said terminal voltage is greater than said predetermined value; and

increasing said frequency of said electric power by a second frequency value when it is determined that said terminal voltage fails to be greater than said predetermined value.

5,083,066
METHOD OF CONTROLLING SYNCHRONOUS OPERATION OF MACHINE TOOL

Katsuo Kohari, Tachikawa; Shinichi Kono, and Masaaki Fukukura, both of Oshino, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

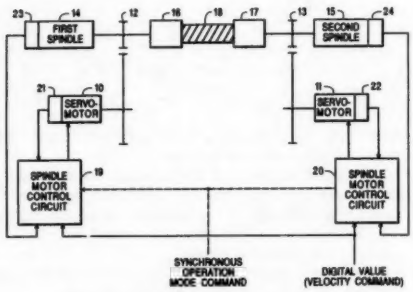
PCT No. PCT/JP89/00779, § 371 Date Feb. 9, 1990, § 102(e) Date Feb. 9, 1990, PCT Pub. No. WO90/01829, PCT Pub. Date Feb. 22, 1990

PCT Filed Jul. 28, 1989, Ser. No. 460,105

Claims priority, application Japan, Aug. 2, 1988, 63-193146

Int. Cl.[5] H02P *5/52*

U.S. Cl. 318—41 **3 Claims**



2. In a machine tool having two spindle motors, each controlled by a control circuit which includes a velocity controller and a position controller, wherein first and second spindles are axially oriented in opposition and are driven independently by the respective spindle motors, an apparatus for controlling synchronous operation of the two spindles, comprising:

means for detecting the respective positions of the spindle, when it is desired to transfer a workpiece from the first spindle to the second spindle;

means for supplying a position feedback signal for each spindle to a respective spindle motor control circuit;

signal input switch means for selecting each spindle position command signal and velocity command signal and supplying these signals to the respective control circuit;

isolating switch means for isolating the position controller of each control circuit from the velocity controller of the same control circuit; and

synchronous operation mode setting means for controlling the isolating switch means and changing over the velocity command to the position command wherein, when synchronous operation of the spindles is desired, the signal input switch means and the isolating switch means are each moved to a first contact side so that the velocity command enters the control circuits as the spindle position command signal, and, when non-synchronous operation of the spindles is desired, the signal input switch means and the isolating switch means are each moved to a second contact side so that the velocity command enters the control circuits.

5,083,067
DRIVING CIRCUIT FOR BRUSHLESS MOTOR

Koji Soushin; Hiroaki Koshin; Shinichi Okamoto, and Toshiharu Ohashi, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Japan

Filed Aug. 8, 1990, Ser. No. 564,164

Claims priority, application Japan, Aug. 12, 1989, 1-208322

Int. Cl.[5] H02P *6/02*

U.S. Cl. 318—254 **4 Claims**

1. A control system for driving brushless motors having three phase bipolar coils, comprising:

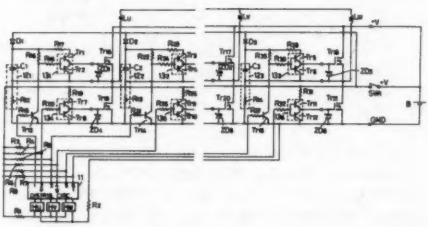
a distributor circuit which receives three phase positional signals in electric $2\pi/3$ phase relationship from a position detector and generates a train of predetermined signals;

a plurality of pairs of power MOSFET's forming upper side and lower side half-bridges;

a first group of transistor bridges driving, at the gate, the lower side power MOSFET's of the half-bridges in response to the train of signals of said distributor circuit;

a number of floating power sources each including a capacitor and a resistor, the resistor separating the capacitor from a ground terminal of the control system to render the charge of the capacitor in the floating power sources independent from the potential of the ground terminal;

a second group of transistor bridges each making one of said



respective floating power sources its own power source and driving, at the gate, the upper side power MOSFET's of the half-bridges in response to the train of signals of the distributor circuit;

a control power source connected to said pairs of power MOSFET's; and

means for damping the rotation of the motor by setting any one of the pairs of the upper side power MOSFET's and the lower side power MOSFET's which are connected to the three-phase bipolar coils of the brushless motor in a mutually reverse operating state by turning off the control power source and utilizing a residual charge in the capacitors of the floating power sources for setting the MOSFET's.

5,083,068
METHOD AND DEVICE FOR ENLARGING A STOPPAGE SAFETY FUNCTION FOR ELECTRIC MOTORS

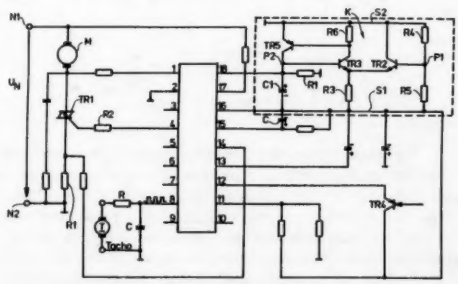
Peter Neef, Schwabstrasse 33, D-7143 Vaihingen/Enz, Fed. Rep. of Germany

Filed Oct. 23, 1990, Ser. No. 602,210

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1989, 3937446

Int. Cl.[5] H02H *7/08*

U.S. Cl. 318—434 **11 Claims**



1. A system for enhancing the stop-safety function for an electric motor having a connection across power mains, comprising:

sensor means for sensing rotation of said motor and outputting signals in response to the rate of said rotation;

first circuit means for charging and discharging a voltage storage element and for opening said connection to said motor in response to a predetermined level of stored voltage, said first circuit means being configured to receive said sensed signals and to store said voltage on said storage element in a magnitude inversely related to said rotational rate, a maximum voltage being stored when said motor is stopped;

comparison means for comparing the instantaneous voltage of said storage element against a preselected reference voltage, said reference voltage being representative of a selected maximum output of said motor;

a reference voltage source connected to said comparison means;

second circuit means responsive to said comparison means for continuously maintaining at least said predetermined voltage level of said storage element when the voltage of said storage element achieves a predetermined relationship relative to said reference voltage;

said second circuit means in operation being energized by said power mains and being non-resetable, reclosing of said motor connection after said opening being enabled by disconnection from said mains of said second circuit means.

5,083,069

CONTROL PEDAL FOR AN ELECTRIC MACHINE

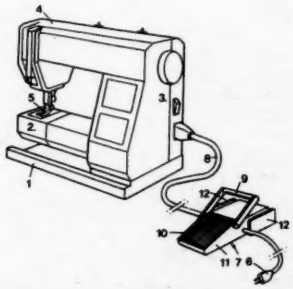
Antonio Jimenez, Meyrin, and Michel Combepine, Les Avanchets, both of Switzerland, assignors to Mefina S.A., Fribourg, Switzerland

Continuation of Ser. No. 439,469, Nov. 21, 1989, abandoned. This application Feb. 22, 1991, Ser. No. 659,448

Claims priority, application Switzerland, Nov. 28, 1988, 4412/88

Int. Cl.[5] D05B *69/18*

U.S. Cl. 318—558 **6 Claims**



1. Control pedal for an electric machine, comprising a housing and a U-shaped handle having free ends pivotally mounted on the housing for swinging movement of the handle relative to the housing between two positions, one of which is used for transporting the pedal and the other of which is used for operating and controlling the speed of an electric machine connected to the pedal by an electric cord, a variable electric element in the housing that permits the operation and adjustment of the speed of the machine, said variable electric responding to swinging movement of the handle relative to the housing, in said other position, to operate and control the speed of the machine, the U-shaped handle in said one position having a central portion spaced from said housing a distance sufficient to permit the hand of a user to grasp said central portion to transport said control pedal.

5,083,070

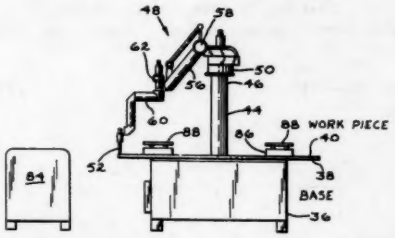
INDEX TABLE WITH CENTER MOUNTED ROBOT ARM

Mark D. Poupard, Jackson, and Edward L. Cooper, Clarklake, both of Mich., assignors to Accubilt, Inc., Jackson, Mich.

Filed May 10, 1990, Ser. No. 521,414

Int. Cl.[5] G05B *1/06*

U.S. Cl. 318—568.1 **4 Claims**



1. In combination, a base, a rotatable index table having an axis of rotation and a work supporting surface substantially perpendicular to said axis of rotation mounted on said base, motor means selectively rotating said index table on said base about said axis of rotation, electrical sensing means defined on said base and index table indicating the rotative position of said table with respect to said base, a column mounted on said base extending from said work supporting surface substantially concentric to said axis having an outer end spaced from said work supporting surface, a computer controlled rotatable robotic tool mounted on said column outer end, said computer controlled robotic tool comprising a robot consisting of a plurality of servo-motor powered arms, a computer control operatively connected to said robotic tool, said electrical sensing means and said motor means, said computer control operating said robotic tool and rotating said index table in a programmed manner to cause said robotic tool to work on work pieces mounted on said work supporting surface.

5,083,071

SPINDLE CONTROL SYSTEM

Takao Sasaki, Hachioji; Kentaro Fujibayashi, Musashino, and Morimasa Sato, Hachioji, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

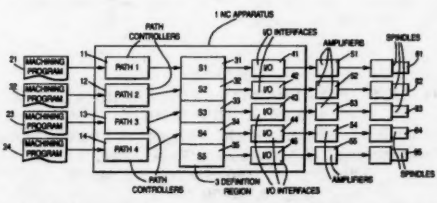
PCT No. PCT/JP89/01002, § 371 Date May 29, 1990, § 102(e) Date May 29, 1990, PCT Pub. No. WO90/04816, PCT Pub. Date May 3, 1990

PCT Filed Sep. 29, 1989, Ser. No. 476,415

Claims priority, application Japan, Oct. 20, 1988, 63-264874

Int. Cl.[5] G05B *19/18*

U.S. Cl. 318—569 **8 Claims**



1. A spindle control system of a numerical control apparatus capable of independently controlling a plurality of spindles by a plurality of path controllers, comprising the steps of:

(a) defining connecting relationships between said path controllers and said respective spindles by storing the connecting relationships in a definition region in the numerical control apparatus.

(b) changing the content of said definition region by a ma-

chining program, whereby said spindles are connected to be controlled by other of said path controllers.

5,083,072

POSITION CONTROL MEANS AND METHOD FOR SERVO MOTOR

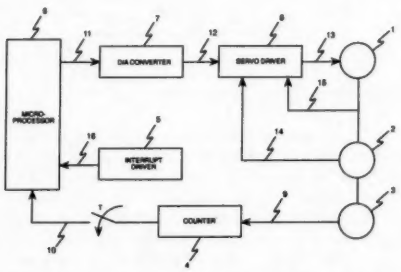
Jin Il Song, Inchun, Rep. of Korea, assignor to Samsung Electronics Co. Ltd., Suweon, Rep. of Korea

Filed Dec. 29, 1989, Ser. No. 456,788

Claims priority, application Rep. of Korea, Dec. 30, 1988, 17942/88

Int. Cl.[5] G05B *19/18*

U.S. Cl. 318—571 **2 Claims**



1. A position control system for controlling the exponential acceleration and deceleration pattern of a servo motor, said position control system comprising:

at least one servo motor for transferring equipment, said motor cable of outputting a first feedback signal;

microprocessing means for generating a digital speed command signal using linear equations, said microprocessor means comprising means for calculating a position deviation between a destination position and a current position of said at least one servo motor;

interrupt means for periodically sending an interrupt signal to said microprocessing means;

speed detecting means for determining current servo motor speed, and outputting a second feedback signal;

encoder detecting means for determining the current position of said servo motor and outputting pulses corresponding to the current position of said servo motor;

converter means for converting said digital speed command signal to an analog speed command;

counting means for counting pulses obtained from said encoder detecting means and outputting a position signal corresponding to the current position of the servo motor to said microprocessor means;

servo driver means for supplying electrical current to said at least one servo motor by processing said analog speed command signal as reference input, and said first and second feedback signals.

5,083,073

METHOD AND APPARATUS FOR CALIBRATING A VISION GUIDED ROBOT

Hideyuki Kato, Monroe, Mich., assignor to Mazada Motor Manufacturing U.S.A. Corp., Flat Rock, Mich.

Filed Sep. 20, 1990, Ser. No. 585,546

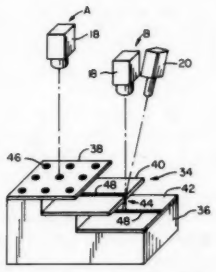
Int. Cl.[5] G05B *19/42*

U.S. Cl. 318—577 **13 Claims**

1. A method of calibrating a vision-guided robot of type having a slit light unit for illuminating a workpiece with a target image, a camera for detecting said target image, a tool for working upon said workpiece, and control means for positioning said tool in response to image signals from said camera such that said camera signals correspond to stored image signals, in order to compensate for out-of-alignment conditions of said light unit and said camera relative to said tool, comprising the steps of:

(a) displacing said robot to a first calibration position (A) wherein said camera is positioned at a predetermined orientation toward a first target and perceives a first target image;

(b) determining a camera correction value (M) between a desired camera spatial position relative to said tool and an



actual camera spatial position relative to said tool by comparing said perceived first target image with a stored first target image; and

(c) incorporating said camera correction value (M) in a stored sequence for robot tool positioning during a subsequent operational movement, thereby compensating for an out-of-alignment condition of said camera relative to said tool without actual adjustment of said camera.

5,083,074

METHOD FOR ERROR CORRECTION IN SYNCHRONIZED SUPERPOSED OPERATION OF SERVOMOTORS

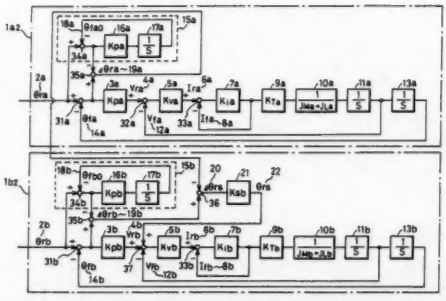
Hironori Suzuki, and Teruaki Ikutame, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 22, 1990, Ser. No. 571,355

Claims priority, application Japan, Nov. 30, 1989, 1-309299

Int. Cl.[5] G05B *11/32*

U.S. Cl. 318—625 **2 Claims**



1. A method for error correction in a synchronized superposed operation of servomotors for rotating respective shafts coupled to said servomotors, comprising the steps of:

obtaining an ideal position deviation of a main shaft based on a target position command for a controller of a servomotor coupled to said main shaft;

obtaining an actual position deviation of said main shaft based on an actual position of said main shaft;

calculating a difference between said ideal position deviation and said actual position deviation to thereby obtain a first position deviation difference;

obtaining an ideal position deviation of a subsidiary shaft

based on a target position command for a controller of a servomotor coupled to said subsidiary shaft;

obtaining an actual position deviation of said subsidiary shaft based on an actual position of said subsidiary shaft;

calculating a difference between said ideal position deviation of said subsidiary shaft and said actual position deviation of said subsidiary shaft to thereby obtain a second position deviation difference;

calculating a speed correction quantity from a difference between said first position deviation difference and said second position deviation difference; and

correcting a speed command in said subsidiary shaft controller as a function of said speed correction quantity.

5,083,075

ELECTROMAGNETICALLY OPERATED CONTROL SYSTEM

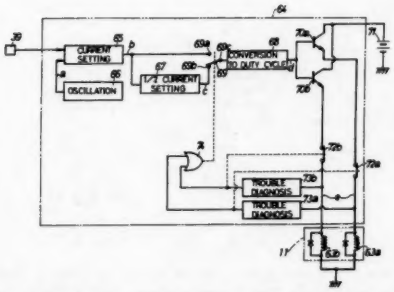
Makoto Sato, and Hiromi Inagaki, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 26, 1989, Ser. No. 456,694

Claims priority, application Japan, Dec. 27, 1988, 63-329708; Dec. 27, 1988, 63-329709

Int. Cl.[5] B60T *8/04, 8/88*

U.S. Cl. 318—640 **4 Claims**



1. An electromagnetically operated control system comprising:

an actuator means having an electromagnetic solenoid having a pair of coils which generate a force of a magnitude corresponding to an amount of electricity input to the electromagnetic solenoid; and

a control circuit for controlling said amount of input electricity, said control circuit is constructed to be changed over between a plurality of stages, said control circuit including a half amount setting means for applying half of an amount of input electricity to each coil, respectively in one of the states, and an amount setting means for applying an entire amount of input electricity to an unfailed coil upon failure in either one of the coils in another of the states.

5,083,076

PORTABLE BATTERY BOOSTER

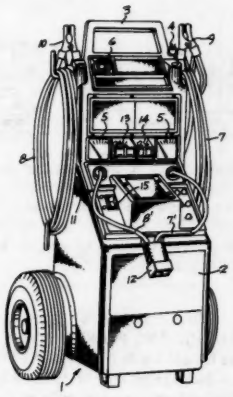
Clyde A. Scott, Kirkland, Wash., assignor to P.S.O. Electric, Incorporated, Seattle, Wash.

Filed Nov. 13, 1989, Ser. No. 436,516

Int. Cl.[5] H02J *7/00;* **H01M** *10/46;* **H01R** *11/00*

U.S. Cl. 320—2 **8 Claims**

1. A booster unit for jumping a vehicle battery or batteries comprising first booster battery means for producing electric power of a first potential, second booster battery means separate from said first booster battery means for producing electric power of a second potential, jumper cable means for conveying electric power and having end clamps connectible to the vehicle battery or batteries, means for connecting said jumper cable means to said first and second booster battery means, said connecting means including a first connector component and a plurality of second connector components, said first connector component being connected to said jumper cable means and being optionally connectible to either one of said second connector components, said connecting means further including means interconnecting said first and second booster battery means with said second connector components such that when said first connector component is connected to one of said second connector components, power of the first potential is conveyed through the jumper cable means, whereas when said first connector component is connected to the other of said second connector components, power of a potential equal to the first potential plus the second potential is



conveyed through the jumper cable means, and display and circuit means operable when said first connector component is disconnected from said second connector components for indicating the polarity of power across said jumper cable means when said jumper cable means are connected to the vehicle battery or batteries, said display and circuit means including a bank of indicator lamps and means for actuating said lamps including a first lamp actuated when said jumper cable means are applied across vehicle batteries of about 12 volts potential and a second lamp actuated when said jumper cable means are applied across vehicle batteries of much more than 12 volts but less than about 24 volts potential.

5,083,077

BRUSHLESS DOUBLY-FED GENERATION SYSTEM FOR VEHICLES

Alan Wallace, and René Spée, both of Corvallis, Oreg., assignors to The State of Oregon Acting by and through the State Board of Higher Education on Behalf of Oregon State University, Eugene, Oreg.

Filed Jul. 31, 1990, Ser. No. 560,188

Int. Cl.[5] H02P *9/00*

U.S. Cl. 322—32 **30 Claims**

1. A generation system for generating DC power on board a vehicle having a DC bus and propulsion means for propelling the vehicle, the generation system comprising:

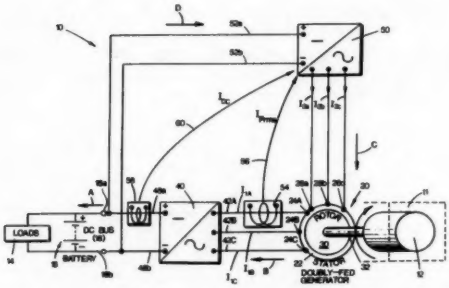
a brushless doubly-fed generator having a rotor with rotor conductors and a stator with stator windings, the stator windings comprising first and second polyphase stator systems, the rotor mechanically coupled to and driven by the propulsion means with a driving force to produce an AC power output from the first polyphase stator system;

rectification means electrically coupled with the first polyphase stator system of the generator for rectifying the AC power output received from the first polyphase stator system into DC power for delivery to the DC bus;

sensor means for sensing a parameter of the generation

system and for producing a sensor signal in response to the sensed generation system parameter; and

converter means responsive to the sensor signal for converting power received from an excitation power source into excitation power which is delivered to the second poly-



phase stator system, with the excitation power converted by the converter means in response to the sensor signal so as to produce a controlled flow of the AC power output from the first polyphase stator system of the generator substantially disregarding variations in the driving force of the propulsion means.

5,083,078

DEVICE FOR SUPPLYING POWER TO AN ELECTRONIC COMPUTER IN A MOTOR VEHICLE

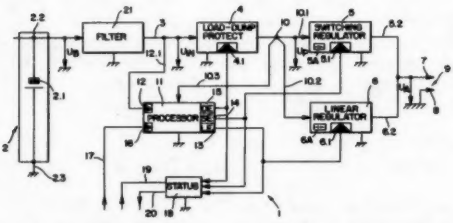
Helmut Kübler, Affalterbach, and Freidrich Kübler, Böblingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Apr. 25, 1991, Ser. No. 691,416

Claims priority, application Fed. Rep. of Germany, May 12, 1990, 4015351

Int. Cl.[5] G05F *1/46;* H02M *3/00*

U.S. Cl. 323—268 **14 Claims**



1. Device for supplying power to an electronic computer in a motor vehicle, comprising:

first and second voltage regulators, operable independently of one another and having parallel inputs and outputs, and in which a desired output voltage is regulated downwards from an input voltage provided by a vehicle network, the first and second regulators each including at least one capacitive storage means at their inputs;

a protective device coupled to the inputs of the first and second regulators, said protective device including means for connecting and disconnecting the first and second regulators from the input voltage; and

a voltage monitoring circuit coupled to the first and second regulators and the protective device, which said voltage monitoring circuit detects and evaluates the input voltage to be regulated downward from the vehicle network and includes at least one output each for individually controlling activation, voltage range by voltage range, of the first and second regulators and the protective device;

said voltage monitoring circuit including means for controlling, as a function of an evaluation result of the input voltage to be regulated downwards:

no activation of the first and second regulators in an input voltage range from zero up to a first limit;

activation of the first regulator in the input voltage range exclusively between said first and a second limit;

activation of the second regulator in the input voltage range exclusively between a third and a fourth limit, the third limit being below and the fourth limit above the second limit; and

activation of the protective device above the fourth limit for disconnecting said first and second regulators from the input voltage to be regulated downwards.

5,083,079

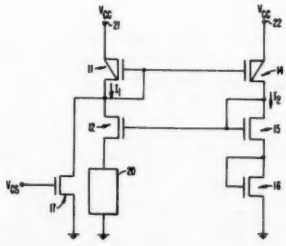
CURRENT REGULATOR, THRESHOLD VOLTAGE GENERATOR

William C. Plants, Santa Clara, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 349,204, May 9, 1989, abandoned. This application Nov. 19, 1990, Ser. No. 617,287

Int. Cl.[5] G05F *3/16*

U.S. Cl. 323—313 **21 Claims**



1. An MOS integrated circuit for generating a reference voltage between a first supply voltage and a second supply voltage, comprising

first, second and third transistors connected in series between said first supply voltage said second supply voltage, said first transistor having a first source/drain electrode of said first transistor coupled to said first supply voltage and having a gate electrode connected to a second source/drain electrode, said third transistor having a first source/drain electrode coupled to said second supply voltage and having a gate electrode coupled to a predetermined voltage such that said third transistor operates in the linear region;

fourth, fifth and sixth transistors connected in series between said first supply voltage and said second supply voltage, said fourth transistor having a first source/drain electrode coupled to said first supply voltage and a gate electrode connected to said first transistor gate electrode, said sixth transistor having a first source/drain electrode coupled to said second supply voltage and a gate electrode connected to a second source/drain electrode, said fifth transistor having a gate electrode connected to said second transistor gate electrode and to said second source/drain electrode of said fourth transistor;

an output terminal connected to said fifth transistor gate electrode;

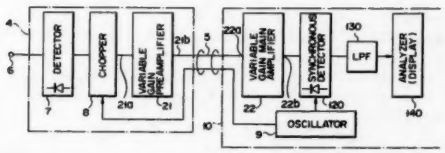
whereby said output terminal provides a reference voltage such that a cascode transistor having a gate electrode connected to said output terminal and having a source/drain electrode coupled to said second supply voltage, has a current therethrough relatively independent of processing variations.

5,083,080

HIGH FREQUENCY SIGNAL MEASURING EQUIPMENT WITH CABLED DETECTING AND SIGNAL COMPANDING

Osamu Tagiri, Atsugi, Japan, assignor to Anritsu Corporation, Tokyo, Japan

Filed Jun. 26, 1990, Ser. No. 544,119
Claims priority, application Japan, Jun. 30, 1989, 1-169377
Int. Cl.[5] G01R *21/04, 19/24, 19/18*
U.S. Cl. 324—118 9 Claims



1. A high frequency signal measuring apparatus comprising:

a signal detector, including:

signal inputting means for inputting a high frequency signal to be measured;

detecting means for detecting said high frequency signal to be measured and which is input by said signal inputting means, said detecting means generating a detecting output signal; and

converting means for amplifying said detecting output signal from said detecting means, said converting means including a variable gain preamplifier which generates a variable gain output signal having a first gain higher than a linear gain when said detecting output signal is smaller than a predetermined value and a second gain lower than the linear gain when said detecting output signal is larger than the predetermined value;

a cable line for transmitting said variable gain output signal from said variable gain preamplifier; and

a measuring apparatus body comprising:

decoding means for amplifying said variable gain output signal from said variable gain preamplifier transmitted by said cable line, said decoding means including a variable gain main amplifier having a first gain lower than a linear gain when said variable gain output signal form said variable gain preamplifier is smaller than a predetermined value and a second gain higher than the linear gain when said variable gain output signal form said variable gain preamplifier is larger than the predetermined value, said variable gain main amplifier including means for correcting amplitude characteristics of said variable gain output signal of said variable gain preamplifier to obtain a main amplifier output signal having log linear characteristics; and

analyzing means included in said measuring apparatus body for performing a predetermined signal analysis of said main amplifier output signal of said variable gain main amplifier.

5,083,081

CURRENT SENSOR FOR AN ELECTRONIC TRIP DEVICE

Michel Barrault, St. Ismier; Philippe Schuster, Grenoble; Roland Moussanet, Notre Dame de Commiers, and Raymond Bresson, Grenoble, all of France, assignors to Merlin Gerin, Meylan, France

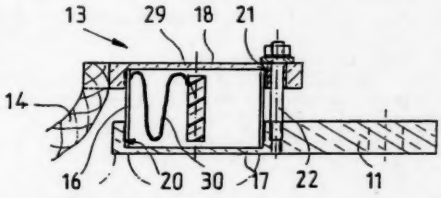
Filed Feb. 21, 1991, Ser. No. 658,771
Claims priority, application France, Mar. 1, 1990, 90 02703
Int. Cl.[5] G01R *15/04;* H01C *7/00*
U.S. Cl. 324—126 4 Claims

1. An alternating or direct current sensor for an electronic trip device of an electrical circuit breaker, comprising :

a flattened input conductor and a flattened output conductor,

a measurement shunt in the form of a hollow cylinder fitted between the faces of said input and output conductors for said current to flow axially through it,

electronic measuring means to measure the potential difference produced in the shunt by the current flow, said electronic means having an amplifier circuit and an amplifier circuit input resistance made of the same material as said shunt, said input resistance being a printed circuit card inserted in said cylinder and held in good thermal contact with the internal face of the cylinder, to be subjected to the same temperature distribution as the shunt.



5,083,082

PERFLUOROPOLYETHERS USED AS FLUIDS FOR TESTING IN ELECTRONIC FIELD

Gianangelo Bargigia; Gerardo Caporiccio, both of Milan; Claudio Tonelli, Concorezzo; Luciano Flabbi, and Giuseppe Marchionni, both of Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Division of Ser. No. 195,356, May 16, 1988, Pat. No. 4,955,726, which is a continuation of Ser. No. 854,785, Apr. 23, 1986, abandoned. This application Apr. 24, 1990, Ser. No. 513,690
Claims priority, application Italy, Apr. 24, 1985, 20477 A/85
Int. Cl.[5] G01N *25/00*
U.S. Cl. 324—158 F 4 Claims

1. Method for carrying out Gross-leak tests comprising dipping the sample into a liquid perfluoropolyether at 125°±5° C. to evidence evolution of bubbles from possible cavities in said sample, said perfluoropolyether having an average molecular weight of at least 390 and being selected from the group consisting of the following seven classes:

(1)

$$A'O(CF(CF_3)-CF_2O)_m(CFXO)_n-A,$$

wherein X is equal to —F or $-CF_3$; A and A′, equal to or different from each other, are $-CF_3$, $-C_2F_5$ or $-C_3F_7$; the units $CF(CF_3)CF_2O$ and CFXO are randomly distributed along the perfluoropolyether chain, m and n are integers, n being 0 or greater, and the m/n ratio being ≧2 when $n \neq 0$;

(2)

$$C_3F_7O(CF(CF_3)-CF_2O)_m-B,$$

wherein B is $-C_2F_5$ or $-C_3F_7$, and m is a positive integer;

(3)

$$(C_3F_7O(CF(CF_3)-CF_2O)_m-CF(CF_3)-)_2$$

wherein m is a positive integer

(4) $A'O(CF(CF_3)CF_2O)_m(C_2F_4O)_n(CFXO)_q—A$, wherein A and A', equal to or different from each other, are $—CF_3$, $—C_2F_5$ or $—C_3F_7$; X is —F or $—CF_3$; and m, n and q are integers;

(5) $CF_3O(C_2F_4O)_p(CF_2O)_q—CF_3$, wherein p and q are integers equal to or different from each other, wherein the p/q ratio is between 0.5 and 2;

(6) $AO—(CF_2CF_2CF_2O)_m—A'$, wherein A and A', equal to or different from each other, are $—CF_3$, $—C_2F_5$ or $—C_3F_7$, and m is an integer; and

(7) $DO—(CF_2CF_2O)_r—D'$, wherein D and D', equal to or different from each other, are $—CF_3$ or $—C_2F_5$, and r is an integer; said perfluoropolyether when

$$\begin{array}{l} CFCF_2O \\ | \\ CF_3 \end{array}$$

units are present show a kinematic viscosity lower than 8.5 cSt at 20° C. and a distillation loss not higher than 10% by weight of the total at 140° C. under atmospheric pressure and at least 90% at 260° C., whereas when

$$\begin{array}{l} CFCF_2O \\ | \\ CF_3 \end{array}$$

units are absent show a kinematic viscosity lower than 18 cSt and a distillation loss not higher than 10% at 140° C. and at least 90% at 280° C.

5,083,083

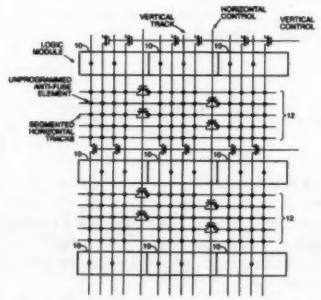
TESTABILITY ARCHITECTURE AND TECHNIQUES FOR PROGRAMMABLE INTERCONNECT ARCHITECTURE

Khaled A. El-Ayat, and Jia-Hwang Chang, both of Cupertino, Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Filed Jul. 5, 1989, Ser. No. 375,799

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—158 R **6 Claims**



1. In a user-configurable integrated circuit including a plurality of uncommitted conductors which may be connected to one another and to functional circuit blocks by programming user-programmable elements to form electronic circuits, a method for testing for defects in the form of charge leakage paths from selected ones of said uncommitted conductors prior to formation of said electronic circuits by a user, including:

temporarily connecting together said selected ones of said uncommitted conductors during a first time period to form a node,

placing an electrical charge onto said node during a second time period within said first time period such that a selected dynamic voltage is placed on said node,

sensing the voltage on said node at a predetermined time after the start of said third time period and within said first time period,

creating a signal related to the voltage sensed at said predetermined time and communicating said signal to an input-/output pad of said integrated circuit, and

comparing said signal with an expected result.

5,083,084

DEVICE FOR CONTACTLESS MEASURING OF ROTATIONAL ANGLE OR ROTATIONAL SPEED

Hans-Peter Bauer, Ditzingen; Klaus Dobler, Gerlingen, and Hansjörg Hachtel, Weissach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

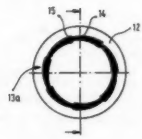
Continuation of Ser. No. 363,893, filed as PCT/DE87/00500, Nov. 6, 1987, abandoned.

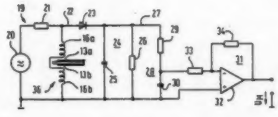
This application Oct. 4, 1990, Ser. No. 593,290

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1986, 3642678

Int. Cl.[5] G01R *7/30;* **G01P** *3/488*

U.S. Cl. 324—207.19 **10 Claims**





1. A device for contactless measuring at least one of rotational angle and a rotational speed of a shaft which is in one of stationary and rotational conditions, said device comprising a disk body fixedly and coaxially supported on said shaft for joint rotation therewith and having two opposing axial sides, at least one of said two axial opposing sides having a continuously extending concentric region formed of an electrically conductive material and comprising at least one uniformly widening segment, said disc body being formed of material which is different from the electrically conductive material said continuously extending concentric region is formed of; at least two sensor coils connected to an AC power source and arranged coaxially relative to each other on said two opposing sides, respectively, in a fixed position with respect to said disk body and operatively associated with said region of an electrically conductive material, each of said two sensor coils having an impedance which varies in accordance with a size of an area of said region of an electrically conductive material each of said two sensor coils are operatively associated with; and an evaluating circuit for measuring variations of the impedance of said two sensor coils to thereby measure the at least one of the rotational angle and the rotational speed by adding signals form said two sensor coils, all elements of said evaluating circuit being so selected that a substantially linear characteristic line is obtained for determining the at least one of the rotational angle and the rotational speed.

5,083,085

COMPACT SHIELDED GRADIENT COIL SYSTEM

Ratson Morad, Zichron Yaakov, Israel, assignor to Elscint Ltd., Haifa, Israel

Filed Mar. 15, 1990, Ser. No. 493,845

Claims priority, application Israel, Mar. 26, 1989, 089743

Int. Cl.[5] G01R *33/20*

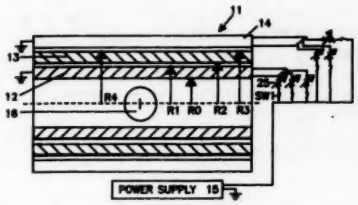
U.S. Cl. 324—318 **7 Claims**

1. A compact shielded gradient system for inclusion within

the main field magnet of magnetic resonance (MR) systems, comprising:

a first set of gradient coils,

an electrically conducting shield extending around said first set of gradient coils and coaxial therewith,



a second set of gradient coils surrounding the shield, and

means for mounting the system within the main field magnet to provide an imaging volume with a linear gradient field and to protect the imaging volume from external eddy currents.

5,083,086

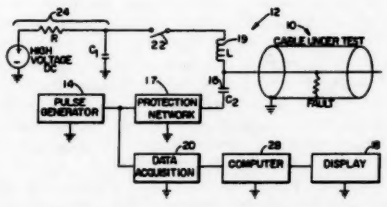
DIFFERENTIAL ARC REFLECTOMETRY

James P. Steiner, Royersford, Pa., assignor to James G. Biddle Co., Blue Bell, Pa.

Filed Jul. 12, 1990, Ser. No. 552,251

Int. Cl.[5] G01R *31/11*

U.S. Cl. 324—533 **5 Claims**



1. The method of determining the location of a fault in electrical conductors from a terminal position which may be remote from the fault using at least a broadband pulse generator to generate a pulse at the terminal position, a voltage source at the terminal position capable of inducing a change of impedance at the fault and time measuring means also at the terminal position, comprising:

generating a first pulse at the terminal position to be propagated down the conductor and reflected back to the terminal position from various impedance discontinuities, including the impedance discontinuity at the fault, if present;

recording the pattern of reflections from points along the conductor up to the fault, resulting from the first pulse;

applying sufficient voltage to the cable to induce a change in impedance at the fault and simultaneously generating a second pulse similar to the first at the terminal position to be propagated down the conductor and reflected back to the terminal position from the various impedance discontinuities up to the fault and from the modified impedance discontinuity at the fault;

subtracting the reflections from the first pulse from the reflections of the second pulse; and

determining from the remaining major reflections, the location of the fault.

5,083,087

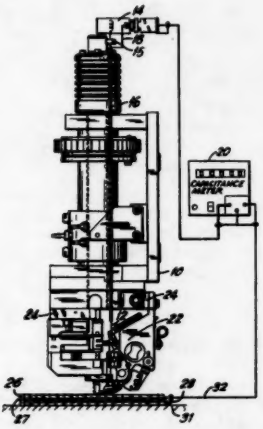
BROKEN WIRE DETECTOR FOR WIRE SCRIBING MACHINES

James M. Fox, Kings Park, and Howard F. Malone, Southold, both of N.Y., assignors to Advanced Interconnection Technology, Inc., Islip, N.Y.

Filed Jul. 17, 1990, Ser. No. 554,130

Int. Cl.[5] G01R *31/02*; B32B *31/00*

U.S. Cl. 324—537 **20 Claims**



1. A broken wire detector for use on wire scribing machines comprising:

scribing means for applying and bonding wire to a workpiece;

a variable frequency signal generating means, said generating means having a first and second output conducting a signal while said wire is being scribed on the workpiece, the first output of the generating means connected to a conductive plate of said wire scribing machine upon which a workpiece being scribed with wire by said scribing means is placed;

a current detecting means for detecting a current in the work while said wire is being scribed on the workpiece, input of the detecting means being connected to the scribing wire by capacitive contacting means; and

a synchronous detecting means having a first and a second input, the first input being connected to the second output of the signal generating means, the second input being connected to the output of the current detecting means, the synchronous detecting means generating a varying D.C. voltage, while said wire is being scribed, amplitude of which is a function of signals conducted into the first and the second input of the synchronous detecting means.

5,083,088

MICROWAVE TEST FIXTURES FOR DETERMINING THE DIELECTRIC PROPERTIES OF A MATERIAL

Alexander B. Bereskin, 452 Riddle Rd., Cincinnati, Ohio 45220

Filed Jul. 24, 1990, Ser. No. 558,063

Int. Cl.[5] G01R *27/04*

U.S. Cl. 324—632 **11 Claims**

1. A method for determining the dielectric properties of a material comprising:

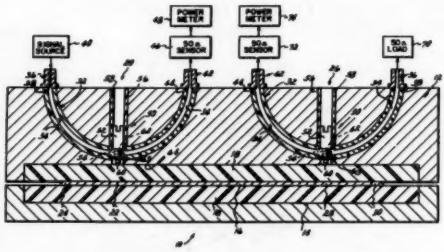
confining test material surrounding an electrical conductor within an electrically shielded cavity;

coupling microwave energy into a center conductor at one end of a transmission line spaced from the cavity;

coupling microwave energy from a tap member electrically connected to the center conductor and into the cavity at a

first location, the first location being coincident a first portion of the electrical conductor in the cavity;

moving the tap member relative the cavity to vary the spacing therebetween without removing the test material and surrounded electrical conductor from the cavity;



measuring microwave energy at the tap member; and

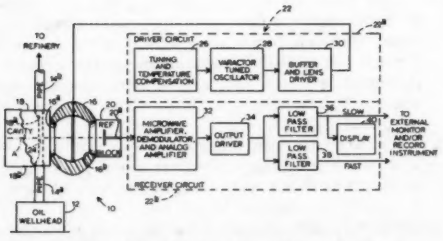
measuring microwave energy from a second location in the cavity, the second location being remote from the first location and coincident with a second portion of the electrical conductor in the cavity.

5,083,089

FLUID MIXTURE RATIO MONITORING METHOD AND APPARATUS

Tex Yukl, Baker City, Oreg., assignor to Spatial Dynamics, Ltd., Baker City, Oreg.

Filed Feb. 20, 1991, Ser. No. 658,083
Int. Cl.[5] G01R *27/04*
U.S. Cl. 324—632 **16 Claims**



3. A method of monitoring the volumetric ratio of two dielectrically disparate fluid constituents comprising:

passing a fluid mixture of two dielectrically distinct constituents through a conduit formed within a cavity having a known dielectric constant, such conduit being dimensioned along a given axis at substantially less than the propagation wavelength of microwave energy at a given frequency through the one of such constituents having the higher dielectric constant, such conduit being of substantially uniform dimension along the given axis in a region therearound and such conduit being of generally rectangular cross section in a region therearound when viewed normal to the given axis;

directing microwave energy along such given axis into such conduit from a source operatively coupled with such cavity at a predetermined distance from such conduit, with such source operating at such given frequency, such predetermined distance being substantially less than the propagation wavelength of microwave energy at such given frequency through either one of such constituents; and

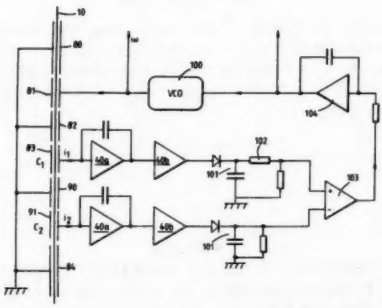
by measuring reflected energy responsive to said passing of such fluid mixture through such conduit and to said directing of such microwave energy, generating an output indicative of the volumetric ratio between such constituents.

5,083,090

CONTACTLESS MEASUREMENT OF THE ELECTRICAL RESISTANCE PER UNIT LENGTH OF FILAMENTS

Gary S. Sapsford, Bishop's Stortford Herts, and Alan Robinson, Harlow, both of Great Britain, assignors to STC PLC, London, England

Filed May 31, 1990, Ser. No. 531,791
Claims priority, application United Kingdom, May 31, 1989, 8912458
Int. Cl.[5] G01R *27/04*
U.S. Cl. 324—632 **16 Claims**



1. A contactless method of measuring the electrical resistance per unit length of a filament, in which method the filament is made the inner conductor of a co-axial transmission line and a measure of the resistance per unit length of the filament is derived from measuring a propagation constant of a signal injected on to that line, wherein the outer conductor of said co-axial transmission line, whose inner conductor is formed by the coated filament, is divided into a plurality of electrically discrete sections arranged in echelon along the filament, wherein a measure of said resistance per unit length is derived from a measure of a propagation constant of the transmission line, which propagation constant is determined by injection an alternating signal on to the transmission line by way of one of said discrete sections of outer conductor and analysing the resulting signal appearing at one other of said discrete sections.

5,083,091

CHARGED BALANCED FEEDBACK MEASUREMENT CIRCUIT

Roger L. Frick, Chanhassen, and John P. Schulte, Eden Prairie, both of Minn., assignors to Rosemount, Inc., Eden Prairie, Minn.

Continuation of Ser. No. 885,178, Apr. 23, 1986, abandoned. This application Mar. 30, 1988, Ser. No. 175,627
Int. Cl.[5] G01R *27/26, 9/12*
U.S. Cl. 324—678 **49 Claims**

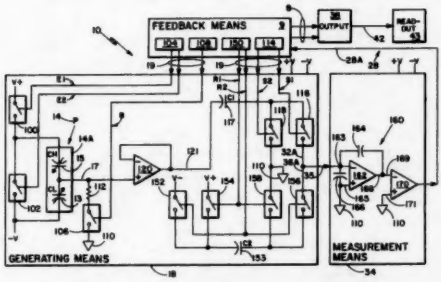
1. A measurement circuit for providing an output signal as a function of an input signal, comprising:

generating means coupled to the input signal for providing a generator signal which is formed by a plurality of charge packets and which is a function of the input signal, the generator means including reactance means for forming the charge packets;

measurement means coupled to the generated means for receiving the charge packets from the reactance means and measuring the generator signal to provide a measurement signal as a function thereof;

feedback means coupled to the measurement means for providing a feedback signal to the generating means as a function of the measurement signal to control the genera-

tor means such that the generator signal tends toward a charge-balanced state; and

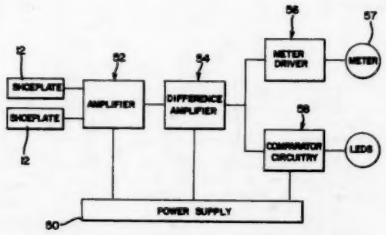


output means for providing the output signal as a function of a count of a number of charge packets contained in the generator signal.

5,083,092
STAND-ON TYPE RESISTANCE TESTER FOR ELECTROSTATIC DISSIPATING SHOE EQUIPPED PERSONS

Stephen S. Clark, and Brian L. Palmer, both of Michigan City, Ind., assignors to Dwyer Instruments, Inc., Michigan City, Ind.

Filed Aug. 21, 1990, Ser. No. 570,377
Int. Cl.[5] G01R *27/02*
U.S. Cl. 324—693 **3 Claims**



1. In an ESD shoe tester for use in resistance resting of ESD shoes as worn by a person in an electro static dissipative environment, wherein the tester includes a pair of metallic shoe plates each defining an upper polished shoe receiving surface on which the person wearing the ESD shows being tested stands, with the respective shoes, of the pair of ESD shoes being tested resting against the respective shoe plates, bracket means for connecting the shoe plates together in substantially parallel but spaced apart side-by-side relation, electrically insulating feet means carried by the plates for resting such plates on a floor for test purposes in such environment and in said side-by-side relation, a housing secured to the bracket, means, an electronic circuit mounted in said housing for measuring the resistance of such person and the pair of shoes being tested, with the housing including a scale portion having a coded scale indicating acceptable and unacceptable shoe resistance positions, and a pointer arm cooperating with the scale portion and actuated by the circuit, when electrically energized, to indicate one of the scale portion positions when the shoes are tested, and means for plug-in electrically energizing said circuit,

the improvement wherein said circuit includes:

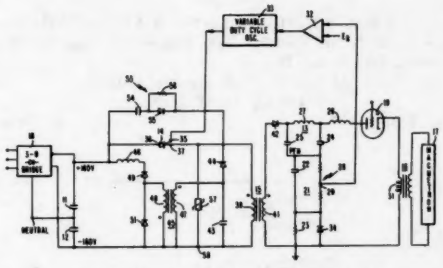
an amplifier circuit comprising an operational amplifier in which the shoe plates are electrically connected in spaced apart relation in the feedback loop of said operational amplifier, and means for utilizing the signal of said operational amplifier, when such ESD shoes, as worn by such person and standing as aforesaid on the tester plates for resistance testing of said ESD shoes, for disposing said pointer arm at one of said positions,

with said operational amplifier being set to test said ESD shoe resistances at a level that approximates 2,000 megohms.

5,083,093
CIRCUIT FOR COUPLING ENERGY TO PULSE FORMING NETWORK OR CAPACITOR

Richard J. Adler, Albuquerque, N. Mex., and R. Fred Nylander, Mountain View, Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Jun. 22, 1990, Ser. No. 542,212
Int. Cl.[5] H03K *3/53, 3/57*
U.S. Cl. 328—65 **36 Claims**



1. A circuit for charging a pulse forming network or capacitor load to a precise voltage from an energy storage device comprising a switch, a monitor circuit, a transformer having a first winding means connected in series with said switch and energy storage device and a second winding means connected in series with said load and monitor circuit, the second winding means coupling current to said load and monitor circuit, the current flowing in the second winding means flowing therein in response to current flowing from the energy storage device through the switch to the first winding means, the monitor circuit being responsive to the voltage across the load and the current flowing through the load to develop an output signal indicative of the voltage across the load and the current flowing through the load, and means responsive to the output signal having a predetermined value for opening said switch.

5,083,094
SELECTIVE POWER COMBINER USING PHASE SHIFTERS

Bjorn G. Forsberg, Los Altos, Calif., assignor to Space Systems/Loral, Inc., Palo Alto, Calif.

Filed Sep. 28, 1990, Ser. No. 590,192
Int. Cl.[5] H03F *3/68*
U.S. Cl. 330—124 R **11 Claims**

1. A circuit for the selection and combination of power amplifiers, said circuit comprising:

first and second power amplifiers each having an input terminal and an output terminal;

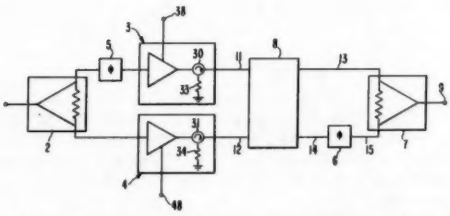
coupled to said amplifiers, means for shifting the signal appearing at one of the two output terminals by 180°;

a 180° 3dB hybrid coupler having first and second inputs respectively coupled to the output terminals of the first and second power amplifiers, and having first and second outputs;

a first 180° phase shifter, having an input and an output, the input of which is coupled to one of the two outputs of the hybrid coupler; and

an output power combiner having first and second inputs

and a single output at which appears the output power of the circuit, wherein the inputs of the output power com-



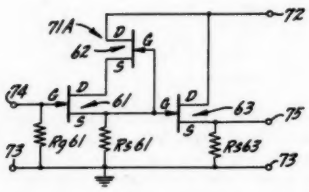
biner are respectively coupled to the output of the 180° phase shifter and the output of the hybrid coupler that is not coupled to the input of the 180° phase shifter.

5,083,095

PLURAL SOURCE FOLLOWER AMPLIFIER

Peter L. Madaffari, Camden, Me., assignor to Knowles Electronics, Inc., Itasca, Ill.

Filed Aug. 22, 1990, Ser. No. 570,820
Int. Cl.[5] H03F *3/16*
U.S. Cl. 330—277 **10 Claims**



1. An impedance conversion amplifier that is effective to suppress ripple and other extraneous signals from a power supply comprising:

first and second field-effect transistors (FETs) each having gate, source, and drain electrodes;

input means for applying an A.C. input signal to the gate of the first FET, the input means including a very high impedance input resistor connected from the gate of the first FET to the reference potential;

a load resistor connecting the source of the first FET to a reference potential;

connector means connecting the drain and source of the first FET to the source and gate, respectively, of the second FET;

and means for connecting the drain of the second FET to a low voltage power supply;

whereby the first FET affords the functions of impedance conversion and gate bias for the second FET and the second FET provides a relatively constant operating voltage for the first FET, driving the drain of the first FET to near the A.C. potential of its gate.

5,083,096

HIGH FREQUENCY AMPLIFIER CIRCUIT CAPABLE OF OPTIMIZING A TOTAL POWER CONSUMPTION

Shinichi Miyazaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

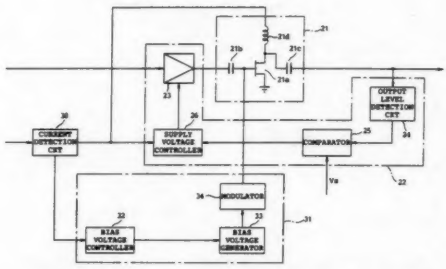
Filed May 31, 1990, Ser. No. 531,425
Claims priority, application Japan, May 31, 1989, 1-135923
Int. Cl.[5] H03G *3/30*
U.S. Cl. 330—279 **7 Claims**

7. A method of achieving an optimum value of total power consumption in an amplifying circuit, the method comprising the steps of:

(a) amplifying a circuit input signal to produce a first output signal;

(b) producing an output signal in response to said first output signal and a bias voltage signal;

(c) detecting a total power consumption of said circuit dur-



ing said amplifying and producing steps, and outputting a current detection signal indicative of the total power consumption; and

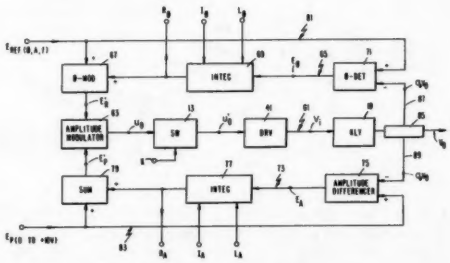
(d) adjusting said bias voltage signal in response to said current detection signal to achieve the optimum value of total power consumption.

5,083,097

ADAPTIVE CONTROL SYSTEM FOR PULSED MEGAWATT KLYSTRONS

Victor W. Bolie, Albuquerque, N. Mex., assignor to The University of New Mexico, Albuquerque, N. Mex.

Filed Sep. 11, 1989, Ser. No. 405,701
Int. Cl.[5] H03L *7/085*
U.S. Cl. 331—6 **16 Claims**



1. The method of speeding up error correcting responses of waveform control systems such as control loops which adjust waveform characteristics such as phase and/or amplitude of a non-linear pulsed output device susceptible to drift and interdependent phase-amplitude effects, by reducing initial errors in the waveform characteristics occurring in the beginning of output pulses of the pulsed output device, said output pulses being adjustable through the waveform control system to reduce the extent of error in the waveform characteristics therein, there nevertheless remaining in the waveform control system at the end of the last preceding output pulse an amount of uncorrected error in the waveform characteristics normally due to drift in the output device or transients in the control loop, the method comprising the steps of:

a. storing in a computer memory a signal value for each waveform characteristic based on the level of error in the waveform characteristic at the end of the previous output pulse of the pulsed output device, each said signal value thus being constant over long periods and not susceptible to deterioration, leakage, or charging;

b. producing a control voltage corresponding to each of said stored signal values; and,

c. applying each control voltage to the pulsed output device to thereby limit the initial error in each waveform characteristic of the next output pulse to essentially the exact level of error existing in the waveform characteristic at the end of the preceding pulse,

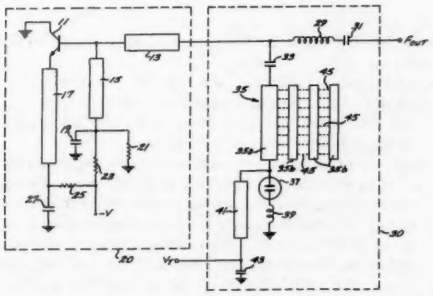
whereby the amount of error that needs to be corrected in the waveform control system is limited to the level of error including zero existing in the waveform characteristic at the end of the preceding output pulse, and further, whereby the individual characteristics of drift of the pulsed output device are retained and thus learned.

5,083,098

TUNABLE VCO FREQUENCY SENSITIVITY

Raul Alidio, Reseda, and Robert Allison, Rancho Palos Verdes, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 25, 1990, Ser. No. 542,860
Int. Cl.[5] H03B *5/18*
U.S. Cl. 331—99 **3 Claims**



1. A tuning network for a microwave voltage controlled oscillator (VCO), comprising:

a transmission line impedance transformer having a first end coupled to an output circuit of the VCO, and having a selectable effective width, so that the effective width of the main transformer line is increased by connecting selected ones of said plurality of transmission lines to the main transformer line comprising:

a main transformer line,

a plurality of transmission lines adjacent said main transformer line, and

wire bonds for electrically connecting selected ones of said plurality of lines to said main transformer line, whereby connection of selected ones of said transmission lines to said main transformer line increases the effective width of said impedance transformer;

a varactor diode coupled to the second end of the transformer line; and

a bias line coupled between a tuning port and said varactor diode, said tuning port for accepting a tuning voltage;

whereby the tuning bandwidth of the oscillator is determined by the effective width of said transmission line impedance transformer.

5,083,099

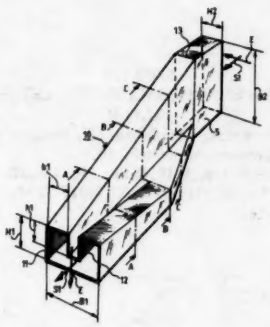
FIELD-TWISTING WAVEGUIDE JUNCTION

Rolf O. E. Lagerlöf, Mölnlycke, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Sweden

Filed Apr. 3, 1990, Ser. No. 503,752
Claims priority, application Sweden, Apr. 12, 1989, 8901324
Int. Cl.[5] H01P *1/16*
U.S. Cl. 333—21 R **12 Claims**

1. A field-twisting waveguide junction for joining a rectangular hollow waveguide of rectangular cross-section and a ridge hollow waveguide of rectangular block-U-shaped cross-section, an inside portion of said U forming as part of said ridged hollow waveguide a ridge extending in a first direction, a long side of said rectangular hollow waveguide being aligned substantially in said first direction, said field twisting waveguide junction comprising:

a first portion of varying cross-section having at one end thereof a cross-section substantially identical to that of said ridged hollow waveguide and having at another end



thereof a substantially L-shaped cross-section enclosing a hollow cavity; and

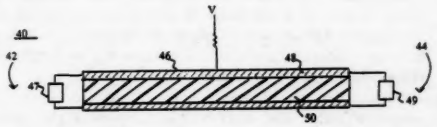
a second portion of varying cross-section contiguous with said first portion and having at one end thereof a cross-section substantially identical to that of said rectangular hollow waveguide and having at another end thereof said substantially L-shaped cross-section enclosing a hollowing cavity.

5,083,100

ELECTRONICALLY VARIABLE DELAY LINE

Thomas B. Hawkins, Boylston; Douglas A. MacIntyre, Medway, both of Mass., and Johannes A. S. Bjorner, Woodbury, Conn., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 464,825, Jan. 16, 1990, abandoned. This application Feb. 26, 1991, Ser. No. 662,383
Int. Cl.[5] H03H *7/20, 7/38*
U.S. Cl. 333—164 **13 Claims**



1. A variable delay line configured for propagating signals with an electronically adjustable delay characteristic comprising:

a signal conductor;

a ground reference conductor;

a variable-capacitance varactor coupled between said ground conductor and said signal conductor;

means for adjusting the capacitance of said varactor to thereby vary said delay characteristic of said delay line; and

impedance optimizing resistive means coupled between said signal conductor and said ground conductor for terminating said delay line and minimizing multiple reflections of said signals over the range of said delay characteristic of said delay line,

wherein said impedance optimizing resistive means includes an input resistance coupled across an input end of said delay line and an output resistance coupled across an

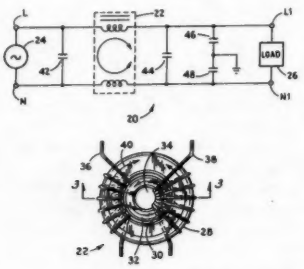
output end of said delay line, and wherein said input resistance and said output resistance are substantially different.

5,083,101

INTEGRATED ELECTROMAGNETIC INTERFERENCE FILTER

W. Richard Frederick, Mundelein, Ill., assignor to Integrated Power Components, Mundelein, Ill.

Filed Jan. 3, 1990, Ser. No. 460,573
Int. Cl.[5] H03H *7/00*; H01F *27/24*
U.S. Cl. 333—181 **13 Claims**



8. An electromagnetic interference filter adapted for connection between electrical, electronic or electromechanical equipment the operation of which causes noise, and a power source for said equipment, said filter comprising:

a first conductor connected between said equipment and said power source;

a second conductor connected between said equipment and said power source;

an inner core of permeable material disposed in said outer window and defining an inner window, said first conductor including a first winding wound about only said outer core, said second conductor including a second winding which is wound about both of said cores to produce an unbalanced field in said inner core in response to differential-mode interference, thereby attenuating said differential-mode interference,

said first and second windings being wound to produce a balanced field in said outer core in response to the power current flow in said first and second windings, and to produce an unbalanced field in said outer core in response to common-mode interference, thereby attenuating said common-mode interference,

a first differential mode noise capacitor connected across said conductors and between said power source and said windings;

a second differential mode noise capacitive element connected across said conductors and between said windings and said equipment;

a first common mode capacitive element connected from said first conductor to ground adjacent said second differential mode capacitor; and

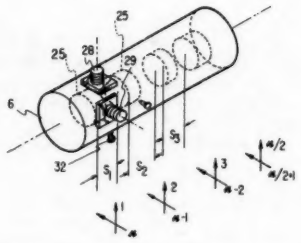
a second common mode capacitive element connected from said second conductor to ground adjacent said second differential mode capacitor whereby said filter assembly passes low frequency conducted power and filters high frequency conducted common mode and differential mode noise emissions.

5,083,102

DUAL MODE DIELECTRIC RESONATOR FILTERS WITHOUT IRIS

Kawthar A. Zaki, Potomac, Md., assignor to University of Maryland, College Park, Md.

Continuation-in-part of Ser. No. 199,180, May 26, 1988, abandoned. This application Sep. 5, 1989, Ser. No. 403,165
Int. Cl.[5] H01P *1/20, 1/208*
U.S. Cl. 333—212 **12 Claims**



4. A dual hybrid mode dielectric resonator band pass filter, comprising:

a tubular enclosure including a plurality of cascade coupled ceramic dielectric-loaded disk resonators, wherein each of said resonators is spaced from each other and coaxially supported in said tubular enclosure;

means for exciting said resonators in said tubular enclosure so as to provide dual hybrid modes, said means for exciting including first and second probes fixed to and penetrating into said enclosure for providing input and output ports, coupling means for providing cross coupling of two orthogonal modes of each resonator, wherein said probes couple the radial electric fields of said two orthogonal modes of said resonators and wherein the depth of penetration into said enclosure and the thickness of said probe is proportional to the amount of coupling of said dual modes; and

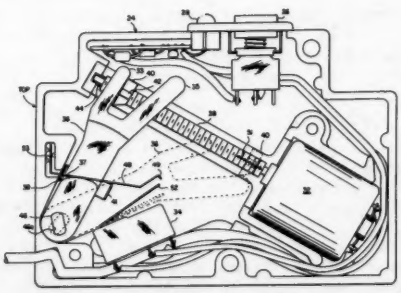
wherein the cascade coupling of said cascade coupled ceramic resonators between any two resonators is determined by the spacing between said any two disk resonators.

5,083,103

ENERGY MANAGEMENT ACCESSORY FOR CIRCUIT BREAKER

John M. Winter; Jerry L. Scheel, and Matthew D. Sortland, all of Cedar Rapids, Iowa, assignors to Square D Company, Palatine, Ill.

Filed Sep. 29, 1989, Ser. No. 415,013
Int. Cl.[5] H01M *75/00*
U.S. Cl. 335—14 **9 Claims**



1. A circuit breaker control system comprising:

a circuit breaker having load contacts:

handle means mounted on said circuit breaker for manually opening and closing said load contacts; and

accessory means mounted on said circuit breaker, controllable from a remote location, for automatically opening said load contacts when accepted, if closed, and for preventing closing of said load contacts by said handle means: wherein said accessory means includes:

a bidirectional DC motor;

a threaded lead screw driven by said motor;

nut means mounted for movement along said lead screw;

delay switching means for controlling energization of said motor as a function of the position of said nut means on said lead screw; and

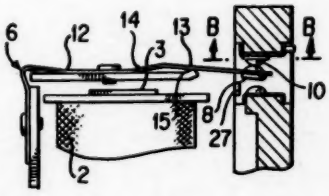
mechanical means for locking said load contacts open.

5,083,104

MINIATURE RELAY

Walter Bassino, Sao Paulo, Brazil, assignor to Schrack Electronica LTDA., Itapecerica Da Serra, Brazil

Filed May 21, 1990, Ser. No. 526,437
Claims priority, application Brazil, Apr. 4, 1990, PI9001560
Int. Cl.[5] H01H *67/02*
U.S. Cl. 335—128 **7 Claims**



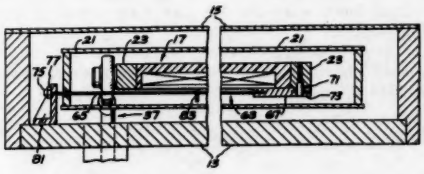
1. A miniature relay assembly comprising a main body (1) having a coil (2) disposed on a core (3) riveted to a yoke (4), the yoke having a segment (4") substantially parallel to an axis of the coil (2), the yoke receiving an armature (5) withheld by resilient means (6), said resilient means maintaining the said armature transversely positioned relative to the core (3) and able to be attracted to the core by a magnetic field produced by the coil (2), the armature (5) being further provided with a flexible blade (7) on which two extreme breaker points (8) are held, the assembly being also provided with a supporting base (9) which receives fixed breaker points (10) and in which the extreme breaker points (8) of the blade (7) operate, and a box (11) attachable to the said base (9), characterized in that the blade (7) is formed by a bifurcated plate, said bifurcated plate having a portion (12) for interconnection to the armature and two elongated coplanar branches (13), having free ends which receive the extreme breaker points (8) and, a bend (14) adjoining the point of bifurcation of the bifurcated plate, whereby entire extreme portions of said branches (13) are held away from the armature (5), the armature being further provided with an extreme top (15) that extends transversely relative to said branches (13), establishing points to support said branches intermediately when flexed toward the armature, the fixed breaker points (10) each being mounted on a resilient structure (17), housed by a compartment (18) provided in a subassembly (19), fixed to a blade holder (20).

5,083,105

AXIAL SUPPORT SYSTEM FOR A MR MAGNET

Kenneth G. Herd; Evangelos T. Laskaris, and Mark E. Vermilyea, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 6, 1990, Ser. No. 505,630
Int. Cl.[5] H01F *7/22*
U.S. Cl. 335—216 **3 Claims**



1. A superconductive MR magnet comprising:

a generally cylindrical vacuum vessel defining an axially extending bore;

a magnet cartridge having a cylindrical shape and situated in the vacuum vessel concentric with and spaced away from the bore of the magnet; and

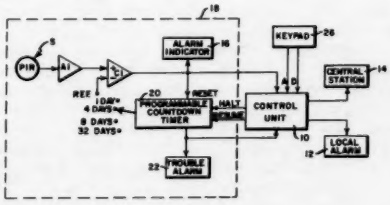
an axial magnet cartridge support comprising a first tension rod affixed to one end of the magnet cartridge and extending axially along the magnet cartridge radially spaced away therefrom, and affixed to the vacuum vessel by tension adjusting means, and a second tension rod affixed to the opposite end of the magnet cartridge and extending axially along the magnet cartridge radially spaced away therefrom, and affixed to the vacuum vessel by tension adjusting means, each of said rods limiting axial motion in one direction.

5,083,106

INTRUDER DETECTION SYSTEM WITH PROGRAMMABLE COUNTDOWN TIMER FOR SELF-SUPERVISION

Karl H. Kostusiak, Pittsford, and William S. Dipoala, Fairport, both of N.Y., assignors to Detection Systems, Inc., Fairport, N.Y.

Filed Feb. 11, 1991, Ser. No. 653,188
Int. Cl.[5] G08B *29/00*
U.S. Cl. 340—506 **7 Claims**



1. An intruder detection system comprising:

(a) an intrusion sensor for detecting intrusion in a region of interest, said sensor being adapted to produce a sensor output signal upon detecting intrusion;

(b) intrusion alarm means operatively coupled to said sensor and responsive to said sensor output signal for producing an intrusion alarm;

(c) a programmable countdown timer for counting-down a preselected time interval and for producing a timer output signal at the end of said preselected time interval, said programmable countdown timer being responsive to said sensor output signal to reset the time remaining in the

countdown when said sensor output signal is produced to the maximum length of said preselected time interval; and

(d) supervisory alarm means, responsive to said timer output signal, for producing a supervisory alarm in the event said sensor output signal is not produced within said preselected time interval.

5,083,107

FIRE ALARM SYSTEM

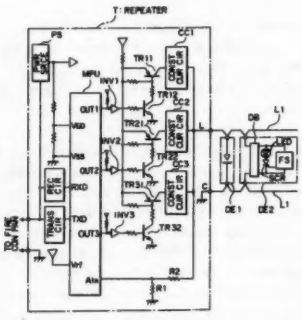
Kaoru Takahashi; Akio Tsumuji, and Ryuji Shutoku, all of Tokyo, Japan, assignors to Nohmi Bosai Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1990, Ser. No. 516,983

Claims priority, application Japan, May 1, 1989, 1-112525; Jun. 29, 1989, 1-168165

Int. Cl.[5] G08B *29/00*

U.S. Cl. 340—506 **16 Claims**



1. A fire alarm system in which a receiver unit such as a fire control panel or a repeater connected to the fire control panel via a signal line has one or plural zone lines connected thereto, said one or plural zone lines having fire detectors connected thereto, said receiver unit receiving a fire signal sent from said fire detectors, said receiver unit comprising:

decision means, responsive to a fire signal received via a zone line from a fire detector, for determining based on the received fire signal whether the fire detector is of a type having only a mechanical contact which functions as a switching means for causing said zone line to be placed in a short-circuited condition when the mechanical contact is closed;

a power control device including supervising power source supply means for supplying current from a supervising power source to said zone lines for said fire detectors and interrupting means for normally connecting said supervising power source supply means to said zone lines for said fire detectors and for interrupting a power supply by said supervising power source supply means to a zone line when said decision means determines that a fire signal received via the zone line is received from a fire detector of the type having only a mechanical contact which functions as the switching means.

5,083,108

WARNING DEVICE FOR A BICYCLE

John R. Guest, 131 Spadina Avenue, Ottawa, Ontario, Canada K1Y 2C2

Filed Feb. 19, 1991, Ser. No. 656,737

Int. Cl.[5] B62J *3/00*

U.S. Cl. 340—432 **15 Claims**

1. A warning device for a bicycle, comprising:

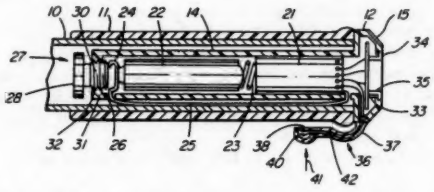
a casing having a tubular portion sized for fitting within the end of a bicycle handle-bar and a head portion for abutting the end of said handle-bar;

means for securing said warning device to said handle-bar;

drive circuit means in said tubular portion;

means for supplying power to said drive circuit means;

a transducer in said head portion connected with said drive circuit means; and



switch means operable between and open condition and a closed condition for energizing said drive circuit means to operate said transducer, said switch means comprising a switch arm extending from said head portion to overlie a handgrip portion of said handle-bar when said warning device is installed.

5,083,109

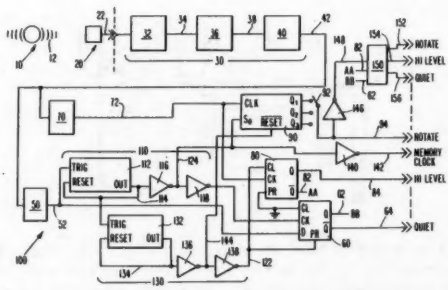
ROTATING SOURCE VERIFICATION DEVICE

John W. McElroy, 51 Street Rd., Newtown Square, Pa. 19073, and P. Leslie Schaumberg, 407 N. Pine St., Langhorne, Pa. 19047

Filed Jul. 5, 1990, Ser. No. 547,964

Int. Cl.[5] G08B *19/00, 21/00*

U.S. Cl. 340—522 **18 Claims**



1. A device for monitoring and verifying the operation of a rotating source, the source normally providing a signal for a fixed period, the device being adapted to respond to a sensor providing a sensor output signal in response to the rotating source, the device comprising:

a first signal conditioning means responsive to the sensor output signal and providing a corresponding conditioned signal, the conditioned signal having a time varying amplitude;

a quiet comparator for comparing the amplitude of the conditioned signal to a predetermined quiet threshold level, the quiet comparator output becoming positive when the conditioned signal exceeds the predetermined quiet threshold level;

a first storage means for storing the instantaneous value of the quiet comparator output when the first storage means is activated;

a second signal conditioning means responsive to the conditioned signal, the second signal conditioning means providing a positive output when the amplitude of the conditioned signal varies by at least a predetermined level,

a second storage means for storing a predetermined value, the second storage means being activated by a positive output from the second signal conditioning means;

a rotation counter having a two-state output, the rotation counter successively counting each positive output from the second signal conditioning means, the rotation counter providing a positive output after a predetermined minimum rotation number has been exceeded upon receiving an output activation signal; and

a first sequencer and a second sequencer, the first sequencer being triggered when the quiet comparator output becomes positive, the first sequencer measuring a first predetermined period, the first predetermined period being longer than the normal fixed period of operation of the source, and subsequently, at the end of the first predetermined period, activating the first storage means and the rotation counter output, and triggering the second sequencer;

the second sequencer measuring a second predetermined period after being triggered, and resetting the rotation counter, and clearing the second storage means and the first storage means, at the end of the second period.

5,083,110

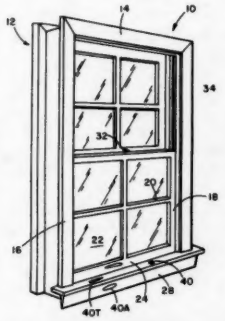
WINDOW ALARM SYSTEM

Richard Ahrens, P.O. Box 613, Hamlin, Pa. 18427

Filed Feb. 4, 1991, Ser. No. 649,987

Int. Cl.[5] G08B *13/00;* **H01H** *3/02*

U.S. Cl. 340—541 **12 Claims**



1. A window alarm system comprising a plurality of self-contained alarm units mounted at various and spaced apart locations on a window, each of said alarm units including

(1) a monolithic, one-piece housing which includes

(a) a top, a bottom, ends and sides, with said top and bottom having outer surfaces,

(b) a width dimension as measured between said sides that is less than one inch,

(c) a length dimension as measured between said ends that is less than three inches,

(d) a thickness dimension as measured between said top outer surface and said bottom outer surface that is less than one-half inch,

(e) said housing being hollow to have a closed chamber defined therein by said top, said bottom, said sides and said ends, and

(f) a spring mounted in said chamber and having one end contacting said top and another end contacting said bottom, said spring biasing said top and bottom away from each other and having a spring force that is pre-set to require more than twenty pounds per square inch of pressure on said top to force said top towards said bottom a predetermined amount, and

(2) an alarm circuit means which includes

(a) a top electrical contact means mounted on said top inner surface,

(b) a bottom electrical contact means mounted on said bottom inner surface,

(c) said top and bottom electrical contact means being oriented to be adjacent to each other and are spaced apart by said predetermined amount to be moved into electrical contact with each other when said housing top and said housing bottom are moved toward each other said predetermined amount, and

(d) a signal circuit means which includes

(i) a housing,

(ii) a signal means in said signal circuit means housing,

(iii) a power source in said signal circuit means housing,

(iv) a first line conductor electrically connecting one side of said signal means to one side of said power source,

(v) a second line conductor electrically connecting another side of said signal means to said top electrical contact means, and

(vi) a third line conductor electrically connecting another side of said power source to said bottom electrical contact means.

5,083,111

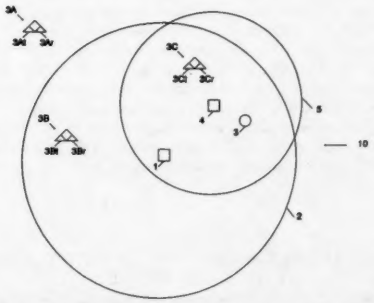
JAMMING APPARATUS FOR ELECTRONIC ARTICLE SURVEILLANCE SYSTEMS

Frank Drucker, Tamarac, and Craig Szklany, Boynton Beach, both of Fla., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Nov. 26, 1990, Ser. No. 618,047

Int. Cl.[5] G08B *13/14;* **H04K** *3/00*

U.S. Cl. 340—572 **20 Claims**



1. A jamming apparatus for use in an article surveillance system of the type employing tags attached to articles to be placed under surveillance, the article surveillance system having a surveillance zone into which a surveillance transmitter transmits message signals for the tags and a surveillance receiver for receiving information from the tags, each tag having a tag receiver for detecting the message signals, the apparatus comprising:

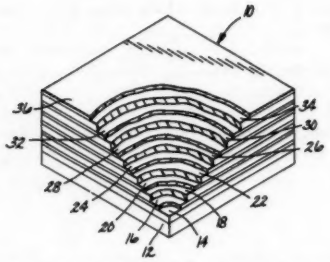
means for establishing a jamming zone extending into the surveillance zone and in which tags can be situated and not respond to the message signals, said establishing means including: means for transmitting a jamming signal within the jamming zone, said jamming signal being such as to inhibit a tag from responding to message signals in the jamming zone, and such as to permit the surveillance receiver, if within the jamming zone and subject to the jamming signal, to respond to information from the tags.

5,083,112

MULTI-LAYER THIN-FILM EAS MARKER

Chester Piotrowski; Charles L. Bruzzone; T050832716g-Long, and Jerome W. McAllister, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 1, 1990, Ser. No. 531,835
Int. Cl.[5] G08B *13/14;* G11C *11/15*
U.S. Cl. 340—572 17 Claims



1. A marker for use with a magnetic-type electronic article surveillance system, which system produces in an interrogation zone alternating magnetic fields having average peak intensities of a few oersteds, said marker having a high permeability and a coercive force sufficiently low so as not to retain any given magnetization state and less than the average intensity encountered in said zone, such that upon exposure to such fields, the magnetization state of the marker is periodically reversed and a remotely detectable characteristic response is produced, said marker comprising:

(a) a sheet-like, flexible substrate;

(b) a plurality of magnetic thin-films deposited on said substrate, each of said magnetic thin-films having substantially the same high permeability and low coercive force; and

(c) a non-magnetic thin-film between each pair of adjacent magnetic thin-films, each said non-magnetic thin-film having a thickness not less than one nm and not more than that of the adjacent magnetic thin-films so as to allow magnetostatic coupling between adjacent magnetic thin-films, and yet sufficiently thick to inhibit exchange coupling between adjacent magnetic films, whereby magnetization states in all of said magnetostatically coupled magnetic thin-films may reverse substantially as a single entity upon exposure to said interrogation fields and thus produce a said response which is sharp and readily distinguishable.

5,083,113

INDUCTIVE COUPLED OBJECT IDENTIFICATION SYSTEM AND METHOD

Christopher Slawinski, Richardson; Richard A. Houghton, Dallas, and George L. Brantingham, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 31, 1990, Ser. No. 472,699
Int. Cl.[5] G08B *3/00*
U.S. Cl. 340—572 17 Claims

1. An inductive coupled object identification system, comprising:

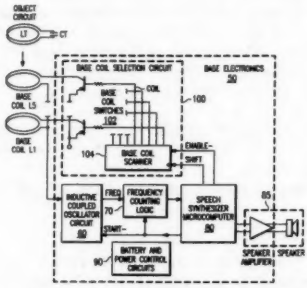
at least one object including an object resonance circuit having a predetermined object resonance frequency unique to said at least one object;

a base unit comprising at least one inductive coupling circuit and an oscillator circuit;

computer processor means for initiating an intermittent start signal as a series of pulses at preselected intervals corresponding to a predetermined frequency for reception by said at least one inductive coupling circuit to activate said at least one inductive coupling circuit;

the object resonance circuit of said at least one object being inductively coupled to the start signal and resonating at the predetermined object resonance frequency unique to said at least one object in response to the placement of said at least one object in a predetermined proximate relationship with respect to said at least one inductive coupling circuit when activated;

said oscillator circuit being responsive to a resonance condi-



tion in an inductively coupled object resonance circuit to provide an oscillation signal corresponding in frequency to the object resonance frequency as an output; and

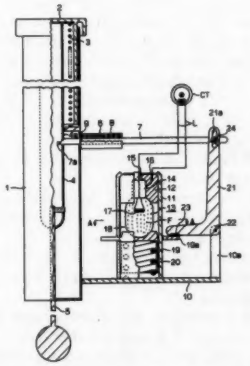
a frequency discrimination circuit responsive to the oscillation signal as output from said oscillator circuit for determining the frequency of the oscillation signal, thereby determining the object resonance frequency and identifying said object.

5,083,114

GROUND FAULT INDICATING DEVICE

Yasuhiro Nakashima, Kakamigahara; Norio Kondo, Nagoya, and Satoshi Morikawa, Aichi, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Sep. 27, 1990, Ser. No. 589,117
Claims priority, application Japan, Sep. 28, 1989, 1-252817; Nov. 8, 1989, 1-291985
Int. Cl.[5] G01W *1/00*
U.S. Cl. 340—601 22 Claims



1. A ground fault indicating device indicating the occurrence of a ground fault in an elecrical transmission line, the indicating device comprising:

indicating means for being switched between a non-indicating position and a ground fault indicating position;

detecting means for detecting the occurrence of a ground fault and outputting a drive signal in accordance with the detection of the accidental current;

fuse means for self destructing in response to said drive

signal, the fuse means including an airtight member, a heat generating member and ignition materials, the airtight member airtightly housing the heat generating member which is heated by the drive signal and the ignition material which is ignited in response to heating of the heat generating member;

moving means positioned at an original position pressing against the airtight member, said moving means cooperating with the ignition material to shatter the airtight member and being displaced when the airtight member is shattered; and

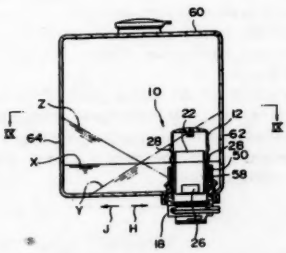
position shifting means for holding the indicating means at the non-indicating position when the moving means is positioned at the original position, said position shifting means releasing the indicating means and moving the indicating means to the ground fault indicating position when the moving means is displaced.

5,083,115

LIQUID-LEVEL DETECTING STRUCTURE

Atsushi Kamiya, Toyohashi, Japan, assignor to Asmo Co., Ltd., Shizuoka, Japan

Filed Jan. 16, 1991, Ser. No. 641,691
Claims priority, application Japan, Jan. 17, 1990, 2-2944[U]
Int. Cl.[5] G01F *23/74*
U.S. Cl. 340—624 **18 Claims**



1. A liquid-level detecting structure for detecting a predetermined minimum level of a liquid, comprising:

a housing disposed in a tank in close proximity to an inside wall surface of said tank, said housing having a flow passage provided through a wall of said housing for allowing liquid to flow into and out of said housing;

a float disposed inside said housing and adapted to be moved by liquid which enters said housing;

indicating means for indicating that said float is at a predetermined position corresponding to a predetermined level of liquid held in said tank; and

means for retaining liquid in said housing when the level of liquid in said tank is higher than said predetermined minimum level and the liquid in the tank is at an inclination.

5,083,116

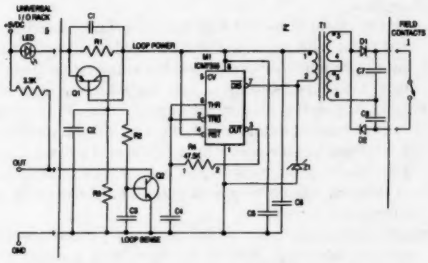
CONTACT SENSING MODULE EMBODYING LOOP POWER SUPPLY AND STATE SENSING FOR RELAYS AND OTHER CONTACTS

Daniel R. Judd, 37 Mill St., Burlington, Mass. 01803

Filed Dec. 29, 1989, Ser. No. 458,888
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—644 **8 Claims**

1. A contact sensor module for sensing the open or closed state of a set of contacts of a relay limit switch and other switching devices having, in combination,

a transformer with input power and connected in a single loop to an output set of contacts for powering the set of contacts from said input power alone and through the loop, and means responsive to impedance and resulting current changes reflected in the loop by closing of the contacts to sense change in the contact state, thereby, with



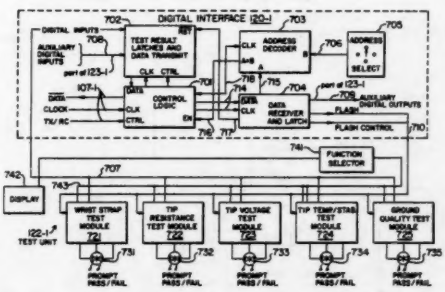
the transformer, to provide both self-powering and sensing in the loop whether the contacts are open or closed.

5,083,117

APPARATUS FOR MONITORING AND CONTROLLING ELECTROSTATIC DISCHARGE

Jan C. Hoigaard, 5940 Flintridge Dr., Colorado Springs, Colo. 80918

Continuation of Ser. No. 204,216, Jun. 7, 1988, abandoned. This application Aug. 7, 1990, Ser. No. 564,057
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—649 **71 Claims**



17. A system for monitoring the operation of electrostatic discharge control equipment located at each of a plurality of test units, each of which is programmable to perform from one to a plurality of predefined measurements, said electrostatic discharge control equipment including a conductive wrist strap on the wrist of a user, comprising:

central control means for regulating the operation of said plurality of test units;

means connected to and interconnecting said plurality of test units and said central control means for exchanging control and data signals therebetween;

wherein each of said test units include a plurality of measuring means, each performing one of said predefined measurements to measure a parameter of said electrostatic discharge control equipment, said plurality of measuring means comprising:

means for measuring the resistance of said conductive wrist strap;

means connected to earth ground and to an electrical ground associated with said test unit for continuously measuring the resistance between said earth ground and said electrical ground;

means, including a soldering iron test point, responsive to said user touching said soldering iron test point with the tip of a hot soldering iron for measuring the AC voltage appearing on said tip of said hot soldering iron;

means responsive to said user touching said soldering iron test point with said tip of said hot soldering iron for measuring the resistance between said tip of said hot soldering iron and said hot soldering iron's electrical ground connection;

means responsive to said user touching said soldering iron test point with said tip of said hot soldering iron for measuring the timewise variation in the temperature (temperature stability) of said tip of said hot soldering iron;

means, responsive to control signals received from said central control means specifying a set of said plurality of predefined measurements to be performed by said test unit for activating the ones of said measuring means included in said test unit corresponding to said defined set of measurements;

means responsive to any of the measured parameters falling outside (above or below) an associated predetermined range of values, including the maximum and minimum values in said range of values for generating a corresponding audible alarm indication and a red LED light failure indication;

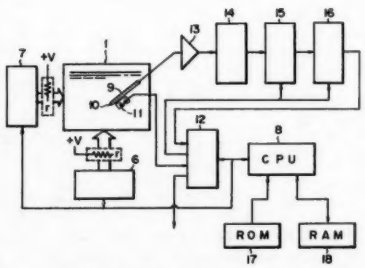
means responsive to any of the measured parameters falling within said associated range of values for generating a corresponding green LED light pass indication.

5,083,118

TRANSPARENT COORDINATE INPUT APPARATUS FOR ELECTROSTATIC CAPACITY COUPLING SYSTEM

Mitsuo Kazama, Soka, Japan, assignor to Pentel Kabushiki Kaisha, Japan

Filed Apr. 16, 1990, Ser. No. 510,286
Int. Cl.[5] G09G *3/02*
U.S. Cl. 340—706 **6 Claims**



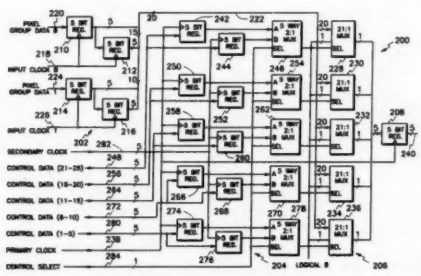
1. A transparent coordinate input apparatus mounted on a display surface of a CRT, an LCD or the like to effect an input comprising: a tablet composed of a first set of wider parallel electrode wires spaced apart from one another with narrow gaps therebetween and arranged close to the display surface and a second set of narrower parallel electrode wires arranged at an intersecting angle with and in front of the first set so that the wider electrode wires are closer to the display surface than the narrower electrode wires; a control section for sequentially applying pulse signals to said electrode wires of said tablet; coordinate indication means electrostatic-capacity coupled to the pulse signals applied to said electrode wires of said tablet to effect signal detection; calculation means for calculating a positional coordinate from the pulse signals detected by said coordinate indication means; and noise preventive means for relieving a noise from the display surface, the noise preventive means comprising a plurality of resistors each equivalently grounded to one end of one of said wider parallel electrode wires of said tablet; whereby the wider parallel electrode wires that are not applied with the pulse signals act as a shield to reduce the effects of noise emanating from the display surface on the coordinate indication means.

5,083,119

STATE MACHINE CONTROLLED VIDEO PROCESSOR

Neil F. Trevett, Kingston-upon-Thames, and Malcolm E. Wilson, Bridport, both of England, assignors to Du Pont Pixel Systems Limited, United Kingdom

Filed Dec. 19, 1988, Ser. No. 286,080
Claims priority, application United Kingdom, Feb. 11, 1988, 8893102
Int. Cl.[5] G09G *5/40*
U.S. Cl. 340—723 **36 Claims**



1. An image processing apparatus, comprising:

clock means for supplying a clock signal;

first register means responsive to the clock means to load and hold a pixel group of pixel data;

second register means responsive to the clock means to load and hold the pixel group of pixel data held in the first register means;

output register means to hold a group of pixel data;

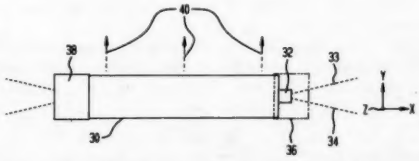
distribution means operable to supply to each pixel location in the output register means, the pixel data in any respective selected one of the pixel locations in the first and second register means.

5,083,120

FLAT PANEL DISPLAY UTILIZING LEAKY LIGHTGUIDES

Terence J. Nelson, New Providence, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Feb. 23, 1990, Ser. No. 484,388
Int. Cl.[5] G09G *3/36*
U.S. Cl. 340—784 **17 Claims**



1. A flat panel display assembly comprising a column-shutter subassembly including a plurality of addressable columns each capable of altering the transmission of light therethrough in response to activation thereof,

and a row-backlight subassembly disposed behind and in close proximity to said column-shutter subassembly, said row-backlight subassembly including a plurality of addressable rows each capable of emitting light in response to activation thereof,

said columns and rows being orthogonally disposed with respect to each other and defining at overlapping intersections thereof picture elements of an image to be displayed,

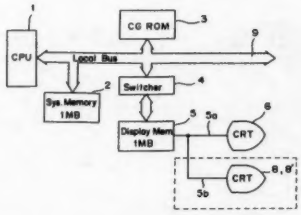
the rows of said row-backlight subassembly respectively comprising elongated leaky lightguides.

5,083,121

SYSTEM FOR MAXIMIZING UTILIZATION OF A DISPLAY MEMORY

Akihiro Nomura, and Toshimi Kiyohara, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 3, 1989, Ser. No. 416,416
Claims priority, application Japan, Oct. 7, 1988, 63-254562
Int. Cl.[5] G09G 1/02
U.S. Cl. 340—799 **6 Claims**



1. A system for maximizing utilization of a display memory of a type including 2_n (n being an integer) memory elements of equal storage capacity arranged in a block fashion in correspondence with a display screen, each of the memory elements being capable of storing at least one color pixel data which includes a predetermined number of bits in a two-dimensional address, the system comprising:

2^{n-m} (m being an integer, wherein n>m) memory groups, each including 2^m memory elements neighboring each other in a horizontal direction with respect to the display screen;

Row Address Strobe (RAS) switching means, connected between an RAS signal line and an RAS terminal of each of the 2^m memory elements forming each of the 2^{n-m} memory groups; and

Column Address Strobe (CAS) switching means, connected between a CAS signal line and a CAS terminal of each of the 2^m memory elements forming each of the 2^{n-m} memory groups,

whereby, when the display in color representation is desired, the RAS switching means is concurrently connected with all of the RAS terminals of the 2^m memory elements and the CAS switching means is sequentially switched over to selectively connect with each of the CAS terminals of the 2^m memory elements, and, when the display in monochromatic representation is desired, the CAS switching means is concurrently connected with all of the CAS terminals of the 2^m memory elements and the RAS switching means is sequentially switched over to selectively connect with each of the RAS terminals of the 2^m memory elements, to thereby permit the display memory to be efficiently utilized for the selective display in color representation and in monochromatic representation.

5,083,122

PROGRAMMABLE INDIVIDUALIZED SECURITY SYSTEM FOR DOOR LOCKS

Keith S. Clark, Sunnyvale, Calif., assignor to OSI Security Devices, Sunnyvale, Calif.

Filed Feb. 21, 1989, Ser. No. 312,791
Int. Cl.[5] H04Q 9/00
U.S. Cl. 340—825.32 **21 Claims**

1. A locking device comprising in operative combination:

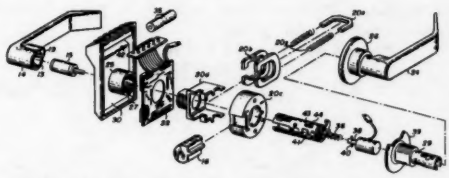
a) a locking mechanism having a first locked position and a second unlocked position;

b) a plunger member having a central axis, said plunger being disposed in engagement with said locking mechanism to move said mechanism alternately into said locked and unlocked positions upon reciprocating linear motion of said plunger along its central axis;

c) a motor having a shaft which is disposed coaxial with said plunger axis;

d) means comprising a helical spring for coupling said motor shaft to said plunger, said coupling means being disposed to move said plunger linearly to said locked position when said motor shaft rotates in one direction, and move said plunger linearly toward said unlocked position when said motor shaft rotates in an opposite direction, said spring having a first fixed end and a second free end portion and said coupling means further includes:

i) means for engaging said second free end portion of said spring disposed to contact individual coil faces of said spring;



ii) said spring engaging means advances along said spring coil faces when said motor turns, to convert rotational motion of said motor shaft to linear reciprocating motion of said plunger, to move said plunger to said locked position when said motor turns in one direction and to said unlocked position when said motor turns in an opposite direction; and

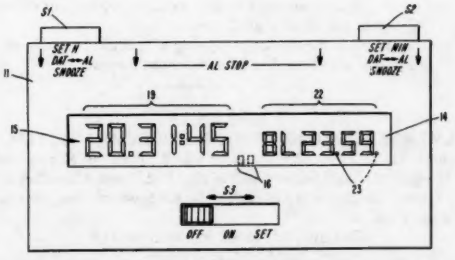
e) said coupling means permitting said motor shaft to continue rotational motion when said plunger is prevented from linear movement in response to an obstruction, and said coupling means stores energy to permit said plunger to complete its normal linear movement to said locked or unlocked position when said obstruction is removed.

5,083,123

AUTONOMOUS RADIO CONTROLLED TIMEPIECE

Wolfgang Ganter, Schramberg, and Wolfram Hodapp, Rottweil, both of Fed. Rep. of Germany, assignors to Junghans Uhren GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 248,388, Sep. 23, 1988, abandoned. This application Oct. 18, 1990, Ser. No. 598,830
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1987, 3731956
Int. Cl.[5] G08C 19/00
U.S. Cl. 340—825.57 **6 Claims**



1. An autonomous radio controlled timepiece comprising:

radio signal receiving means for receiving radio transmissions of coded time data;

a control circuit connected to said radio signal receiving means for decoding the received time data into valid time data;

a pulse generator connected to said control circuit for generating pulses;

a counter connected to said pulse generator for storing the number of pulses generated by said pulse generator;

reset means coupled to said control circuit and said counter for resetting said counter upon the decoding of the valid time data by said control circuit; and

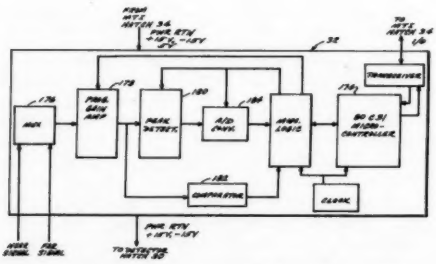
display elements coupled to said counter for displaying a number proportional to the number stored in said counter whereby the number displayed by said display elements is indicative of the time period which has passed since valid time data was decoded.

5,083,124

NUCLEAR LOGGING TOOL ELECTRONICS INCLUDING PROGRAMMABLE GAIN AMPLIFIER AND PEAK DETECTION CIRCUITS

Roy Nordstrom, Durham, Conn., assignor to Teleco Oilfield Services Inc., Meriden, Conn.

Filed Apr. 17, 1990, Ser. No. 511,538
Int. Cl.[5] G01V *1/00*
U.S. Cl. 340—853 **27 Claims**



1. A nuclear logging tool apparatus including a radioactive source, at least one detector assembly spaced from said radioactive source with said detector assembly being positioned to detect radiation resulting from neutrons emitted by said source, and electronic circuit means communicating with said detector assembly, said electronic circuit means comprising:

programmable gain amplifier (PGA) means receiving analog input signal pulses sent by said detector assembly, said PGA means including (a) low pass filter means for improving signal to noise ratio by limiting the high frequency signal content in each pulse and (b) gain means for quantifying pulse amplitudes within preselected spectral limits, said PGA means modifying said analog input signal pulses to PGA output pulses;

peak detector means receiving said PGA output pulses and converting said PGA output pulses to stable DC signal output pulses;

analog to digital converter means for converting said stable DC signal pulses to digital signals; and

microprocessor means for analyzing said digital signals and providing a nuclear log of a borehole formation.

5,083,125

EMERGENCY TRAFFIC SIGNAL PREEMPT SYSTEM

Robert H. Brown; Charles R. Liebich, both of Scottsdale; Gregory B. Page, Gilbert, and Richard M. Scott, Chandler, all of Ariz., assignors to Emergency Signal Systems, Inc., Scottsdale, Ariz.

Filed Jun. 29, 1990, Ser. No. 546,510
Int. Cl.[5] G08G *1/07*
U.S. Cl. 340—906 **26 Claims**

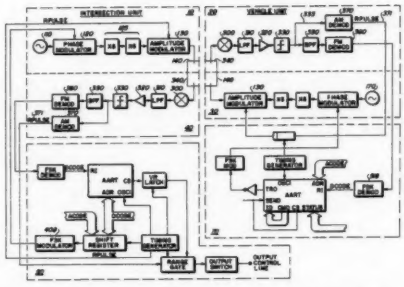
1. An emergency traffic signal control system, comprising:

means for generating at least an access code (ACODE), a direction code (DCODE) and a ranging signal (RPULSE);

an intersection based transmitter/receiver, electrically coupled to said means for generating said codes, said intersection based transmitter/receiver generates an RF signal and impresses said generated codes upon said RF signal and directionally transmits said RF signal as forward tones;

a vehicle based receiver/transmitter which receives said transmitted forward tones;

signal processing means, electrically coupled to said vehicle based receiver/transmitter, for processing said received



forward tones and returning said received forward tones as return tones, to said vehicle based receiver/transmitter for return transmission to said intersection transmitter/-receiver; and

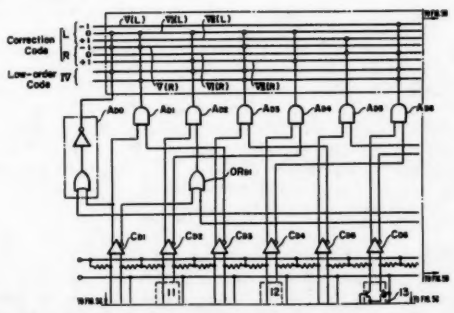
means for validating said return tones and controlling the traffic signals in response to validated return tones and to said ranging signal, said means being electrically coupled to said intersection transmitter/receiver and to said means for generating an RF signal.

5,083,126

ANALOG-TO-DIGITAL CONVERTER

Yoshihiro Komatsu; Youji Yoshii, and Daisuke Murakami, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 27, 1989, Ser. No. 427,705
Claims priority, application Japan, Nov. 4, 1988, 63-277288
Int. Cl.[5] H03M *1/14*
U.S. Cl. 341—156 **3 Claims**



1. An analog-to-digital converter comprising:

switching blocks arranged in a matrix array and actuated for each line by a high-order converted output signal for comparing each of a plurality of reference voltages provided by dividing a reference potential by a line of n reference resistors connected in series with an input signal to be converted;

high-order comparators each thereof comparing a reference voltage on a specific point on each line of said switching

blocks with said input signal to be converted for obtaining a high-order a-bit converted code; and

low-order comparators each thereof supplied with outputs of said switching blocks along each row in common for obtaining a low-order b-bit converted code and a redundancy c-bit converted code for the region outside the range of conversion of the high-order comparator; wherein

said line of said reference resistors is set up by being folded at certain positions so that the points where said reference voltage has its maximum value and minimum value are located in the middle point of the lines of said switching blocks in the matrix array, and wherein n, a, b and c are positive integers.

5,083,127

THERMAL BARRIER FACADE CONSTRUCTION OF HIGH RISE STRUCTURES AND A PROCESS FOR FABRICATION OF A THERMAL BARRIER

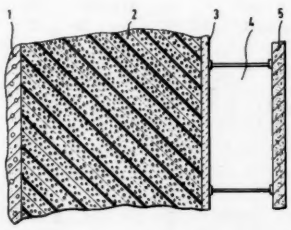
Andreas Frye, Vechta; Jürgen Kruse, Genderkesee; Julius Weyand, Bremen Borgfeld; Joachim Bettermann, Delmenhorst, and Dirk Bringmann, Bremen, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

Filed Jan. 16, 1990, Ser. No. 465,937

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1989, 3900857

Int. Cl.[5] H01Q *17/00*

U.S. Cl. 342—1 **8 Claims**



1. A facade construction for high rise structures, comprising a thermal barrier facade external side formed by a cover; and a thermal barrier layer arranged between a building wall and the cover, the thermal barrier layer being arranged ahead of structural elements which reflect electromagnetic waves in the region of radar waves in an outer area of the building wall and consisting of materials which absorb electromagnetic waves, said materials being constituted by foamed plastics as an electric insulator, into which at least one of electrically conductive and magnetic materials are embedded so as to form conductive regions, the conductive regions having dimensions in all planes at least a thousand times smaller than the wavelengths of the electromagnetic waves to be absorbed and make up a share of up to 10% of the volume of the thermal barrier layer, the cover being located ahead of the thermal barrier, and the wall consisting of an electric insulator.

5,083,128

LOW OBSERVABILITY APERTURE DESIGN FOR EXPENDABLE COUNTERMEASURES DEVICES

Kiyoshi Tsuji, Camarillo, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 14, 1986, Ser. No. 855,220

Int. Cl.[5] H01Q *17/00;* **G01S** *7/38*

U.S. Cl. 342—2 **9 Claims**

1. A system for eliminating RF observability by radar of empty holes left in airborne countermeasure dispensers following the expending of the countermeasure payloads, comprising:

a. a payload dispensing tube having an open end and a closed end;

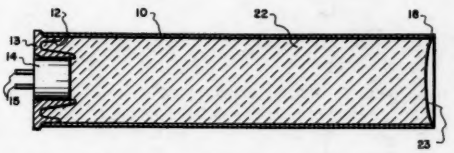
b. an squib gas generating cartridge means positioned in the closed end of said dispensing tube;

c. a piston means slidably received within said dispensing tube and positioned proximate to said squib cartridge means;

d. a chamber adjacent said squib gas generating cartridge means and said piston means;

e. a plastisol material filling said chamber adjacent to said squib gas generating cartridge means; said plastisol material operable to be expanded to form a plastic foam upon activation by application of heat;

f. a payload means loaded into the open end of said dispensing tube and positioned between the open end of said tube and said piston means;



g. a removable closure means mounted at the open end of said payload dispensing tube and adapted to retain the payload means within the dispensing tube;

h. means for energizing said squib gas generating cartridge means to generate gas and heat; the gas generated by said squib gas generating cartridge means operating to drive said piston means forward toward the open end of said dispensing tube, forcing said removable closure means away from the open end of the dispensing tube and forcing the payload means to be dispensed out of the tube into the open air; simultaneously, the heat of combustion from said energized squib gas generating cartridge means operating to heat said heat activated plastisol material in the adjacent chamber, causing the plastisol material to react and expand, thereby filling the expended payload dispensing tube with plastic foam;

j. said plastic foam upon exposure to air forming a barrier and absorber of RF signal energy at the open end of said dispensing tube.

5,083,129

POLICE RADAR DETECTOR FOR DETECTING RADAR SIGNALS AND DETERMINING THE DIRECTIONAL ORIGIN OF THE SIGNAL SOURCE

Michael D. Valentine; Clarence R. Groth; Stephen R. Scholl, and Marwan E. Nusair, all of Cincinnati, Ohio, assignors to Valentine Research, Inc., Cincinnati, Ohio

Filed Feb. 25, 1991, Ser. No. 659,625

Int. Cl.[5] G01S *7/40*

U.S. Cl. 342—20 **10 Claims**

1. A motor vehicle radar signal detector for alerting an operator of a motor vehicle to incoming radar signals, said detector comprising:

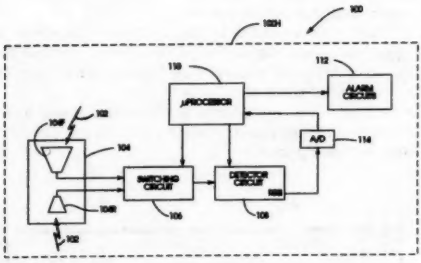
receiver means comprising a first antenna aimed in a first direction relative to said motor vehicle and a second antenna aimed in a second direction relative to said motor vehicle and different from said first direction for receiving incoming radar signals at frequencies within at least one frequency band;

radar signal detector means for generating radar identification signals which identify incoming radar signals;

connector means for connecting signals from said receiver means to said radar signal detector means;

processor means for controlling said connector means to selectively connect signals from said first and second

antennas to said radar signal detector means and responsive to radar identification signals generated by said radar signal detector means to identify radar signals coming from said first direction relative to said motor vehicle and radar signals coming from said second direction relative to said motor vehicle, and to generate direction signals identifying the direction of origin of incoming radar signals; and



alarm means for alerting an operator of a motor vehicle upon identification of incoming radar signals, said alarm means including direction indicating means responsive to said direction signals for identifying whether the identified radar signals are coming from said first direction or are coming from said second direction.

5,083,130

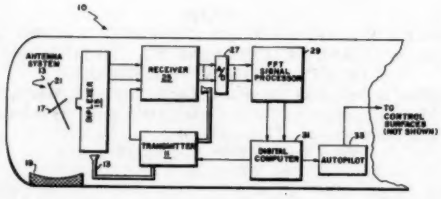
PULSE RADAR AND COMPONENTS THEREFOR

Apostle G. Cardiasmenos, 18 Washington Dr., Acton, Mass. 01720

Continuation of Ser. No. 547,548, Oct. 31, 1983. This application Mar. 8, 1991, Ser. No. 666,826

Int. Cl.[5] G01S *13/00*

U.S. Cl. 342—188 **20 Claims**



1. An apparatus comprising:

(a) means, responsive to a first beam of radio frequency (RF) energy having an electric field and a first path of propagation and responsive to a second beam of RF energy having an electric field orthogonal to the electric field of the first beam of RF energy and a second path of propagation, for passing the first beam of RF energy through said means and for reflecting the second beam of RF energy from said means; and

(b) means, disposed in the path of the first and the second beams of RF energy, for rotating the electric field of the beam of RF energy in a direction and for rotating the electric field of the second beam of RF energy in the same direction.

5,083,131

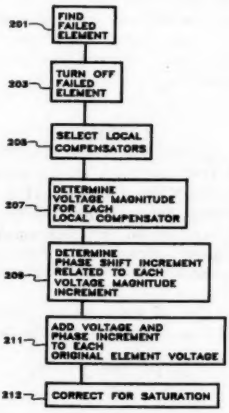
LOCAL COMPENSATION OF FAILED ELEMENTS OF AN ACTIVE ANTENNA ARRAY

Michael D. Julian, Playa Del Rey, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 31, 1990, Ser. No. 531,200

Int. Cl.[5] G01S *7/40*

U.S. Cl. 342—372 **19 Claims**



1. A method for compensating for a failed element of an active antenna array, said array including said failed element and a plurality of adjacent elements, said method comprising the steps of:

turning the failed element off;

selecting a plurality of said adjacent elements as local compensators; and

adjusting the phase and voltage of each local compensator to compensate for said failure.

5,083,132

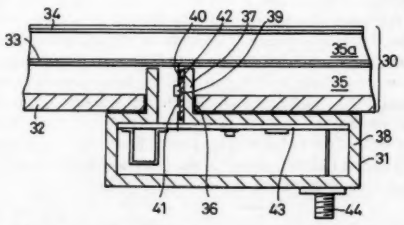
PLANAR ANTENNA WITH ACTIVE CIRCUIT BLOCK

Minoru Kanda; Mikio Komatsu; Hidetsugu Nunoya; Yasuhiro Fujii, and Toshio Abiko, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Apr. 30, 1990, Ser. No. 516,549

Int. Cl.[5] H01Q *1/380, 13/080, 21/000;* **H01P** *1/000*

U.S. Cl. 343—700 MS **9 Claims**



1. A planar antenna comprising an antenna body into which a grounding conductor plate, a feeding network plate having a feeding network pattern formed thereon and a radiation circuit plate having a radiation circuit pattern formed thereon are assembled as mutually separated, an active circuit block mounted to said antenna body incorporating therein active circuit elements, and means for connecting a feeding point of said feeding network plate to a connecting point of said active circuit block, wherein said grounding conductor plate is provided with an aperture at a portion corresponding to said feeding point of said feeding network plate, said active circuit

block comprising a down-converter which includes a casing having a projection insertable into said antenna body through said aperture, said casing accommodating therein said active circuit elements, said projection carrying on an end wall a low noise amplifying device with an input terminal of said amplifying device exposed, and said feeding point of said feeding network plate being connectable to said input terminal of said amplifying device upon insertion of the projection into said antenna body.

5,083,133

WINDOW GLASS ANTENNA FOR VEHICLE

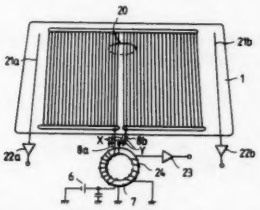
Masami Takayama, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 363,822, Jun. 9, 1989, abandoned. This application Mar. 26, 1991, Ser. No. 675,056

Claims priority, application Japan, Mar. 24, 1988, 63-110011[U]; Nov. 9, 1988, 63-145355[U]

Int. Cl.[5] H01Q *1/32, 1/02*

U.S. Cl. 343—704 **10 Claims**



1. A windshield antenna for a vehicle having a window with first and second sides having equal lengths and third and fourth sides having unequal lengths, said antenna comprising:

(a) a first antenna element adapted to receive amplitude-modulated (AM) waves, said first antenna element comprising a plurality of AM wave-receiving antenna elements mounted on a central portion of the window in a multi-line fashion, parallel to said first and second sides of said window, each of said plurality of AM wave-receiving antenna elements having an equal length;

(b) a pair of spaced-apart second and third antenna elements each adapted to receive frequency-modulated (FM) waves, said second and third antenna elements being disposed on first and second sides of said first antenna element, wherein said second and third antenna elements have equal length and width dimensions, and are disposed symmetrically with respect to said first antenna element so that said second and third antenna elements have the same gain; and wherein said first antenna element is superposed on heating wires mounted on the window glass.

5,083,134

ANTENNA DEVICE FOR AN AUTOMOBILE

Toshihiko Saitou, Ebina; Takashi Yamashita, Sagamihara; Kenichi Ishii, Aichi; Masanobu Ogawa; Shinya Shibata, both of Kanagawa; Kenji Oda, and Masaharu Kume, both of Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

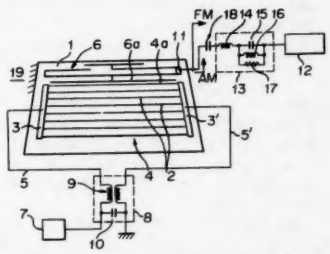
Filed Jul. 13, 1989, Ser. No. 379,345

Claims priority, application Japan, Jul. 14, 1988, 63-173983; Sep. 6, 1988, 63-221313; Mar. 14, 1989, 1-59789

Int. Cl.[5] H01Q *1/32*

U.S. Cl. 343—713 **9 Claims**

1. An antenna device for an automobile comprising an electric heating type defogger having heating strips and a bus bar for feeding a current to the heating strips and an antenna conductor having at least one antenna strip arranged to form a pattern, said defogger and said antenna conductor being one of in and on a rear window glass fitted to a rear window opening formed in an automobile, characterized in that said defogger and said antenna conductor are spaced apart from each other with a predetermined small space in a capacitive coupling relation so that a high frequency current is caused to flow but a direct current is not caused to flow between them; a reactance circuit is connected to said defogger to effect anti-resonance between said defogger and said rear window opening of the body of the automobile at a central frequency in terms of logarithmic scale of a broadcast frequency band region; a quality factor value is determined from the inductance of a choke coil in said reactance circuit and a stray capacity be-



tween said defogger and said rear window opening of the body of the automobile so that the ratio of the impedance of an input to a receiver to the impedance of said antenna conductor viewed from the side of a power feeding terminal is 1; and a matching circuit is inserted between said power feeding terminal of the antenna conductor and said receiver so that the sum of the impedance of said antenna conductor viewed from the side of the input terminal of said receiver and a functional part as an antenna in said rear window glass exhibits a capacitive reactance in a broadcast frequency band region.

5,083,135

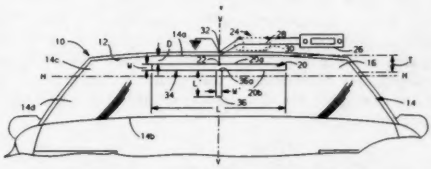
TRANSPARENT FILM ANTENNA FOR A VEHICLE WINDOW

Louis L. Nagy, Warren, Mich.; Frank T. C. Shum, Minneapolis, Minn., and Jimmy L. Funke, Mt. Clemens, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1990, Ser. No. 612,295

Int. Cl.[5] H01Q *1/32*

U.S. Cl. 343—713 **2 Claims**



1. An antenna for receiving and transmitting electromagnetic radio waves from a motor vehicle, the vehicle having a metallic structure forming an aperture with a window glass disposed therein, the window glass having an upper region and substantially horizontal top and bottom edges interfacing with the metallic structure, the antenna comprising:

a principal element formed of a thin transparent film of electrically conducting material supported by the vehicle window glass, the principal element being horizontally elongate and having a generally rectangular shape with upper and lower edges separated by a width W, the upper edge of the principal element being spaced at a distance D from the top edge of the window such that the sum of W and D does not exceed one-third of the distance separating the top and bottom edges of the window, thereby confining the principal element to the upper region of the window glass;

means for electrically feeding the principal element with

respect to a ground point on the vehicle to effectively couple the principal element electromagnetically to the vehicle metallic structure; and

means for tuning an antenna impedance developed between the principal element and the ground point on the vehicle, the tuning means comprising an auxiliary element formed of the thin transparent film and shaped as a vertically elongated rectangle, the auxiliary element having an upper end electrically connected to the center of the lower edge of the principal element and extending downwardly therefrom to provide a T-shaped antenna configuration, the auxiliary element having a specified length, which influences the impedance of the antenna.

5,083,136

TRANSMISSION LINE COUPLING DEVICE WITH CLOSED IMPEDANCE MATCHING LOOP

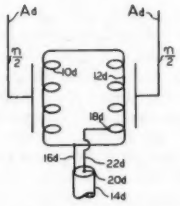
Donald H. Wells, 1011 Wentworth Ave., Holland, Ohio 43528

Filed Nov. 16, 1989, Ser. No. 437,650

The portion of the term of this patent subsequent to Mar. 12, 2008, has been disclaimed.

Int. Cl.[5] **H03H** *11/28;* **H01Q** *9/16*

U.S. Cl. 343—822 **17 Claims**



1. Coupling means for transmitting a signal of generally predetermined frequency and wave length between a two element transmission line of characteristic impedance and a first conductor of given impedance, said means comprising: first and second coils with each coil having first and second opposite ends and with respective first and second ends being directly connected to each other to form a closed loop; first means for connecting a first element of said two element transmission line to a first point on said first coil spaced apart from its second end; second means for connecting a second element of said two element transmission line to said first end of said second coil to cause said signal to travel directly through both coils between said first and second means and produce a range of impedance points around said loop, and said first and second means being disposed on said loop at points having said characteristic impedance there between; and means for coupling said first conductor to said loop, said means for coupling being disposed at a point providing said given impedance to said first conductor.

5,083,137

ENERGY CONTROL CIRCUIT FOR A THERMAL INK-JET PRINTHEAD

Rajeev Badyal; Sam Mahjouri; Donald M. Reid, and Michael J. Gilsdorf, all of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 8, 1991, Ser. No. 652,965

Int. Cl.[5] **B41J** *2/05, 2/355*

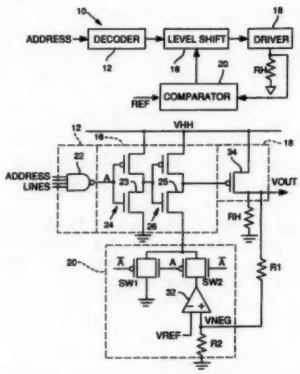
U.S. Cl. 346—1.1 **20 Claims**

1. A circuit for controlling energy delivered to a heater resistor of a thermal inkjet printhead, comprising:

transmitting means for receiving a printer control signal and for transmitting a transmitted signal for energizing the heater resistor;

driver means responsive to the transmitted signal for applying a driver output signal to the heater resistor to provide energy to the heater resistor; and

feedback means for feeding the driver output signal back to the transmitting means to cause the transmitting means to adjust the driver output signal whereby the driver means provides a desired amount of energy to the heater resistor,



the circuit thereby controlling the energy delivered to the heater resistor to generate heat.

5,083,138

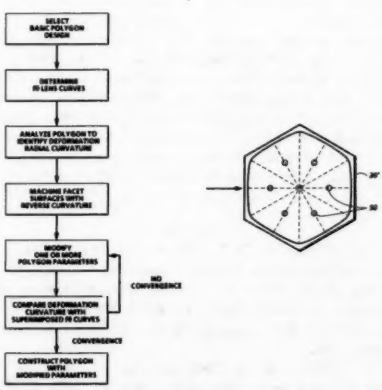
POLYGON SCANNER WITH PREDICTABLE FACET DEFORMATION CHARACTERISTICS

William J. Nowak, Webster, and John H. Hinton, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 11, 1990, Ser. No. 508,140

Int. Cl.[5] **G01D** *9/42*

U.S. Cl. 346—1.1 **9 Claims**


SELECT BASIC POLYGON DESIGN
DETERMINE FF LENS CURVES
ANALYZE POLYGON TO IDENTIFY DEFORMATION RADIAL CURVATURE
MACHINE FACET SURFACES WITH REVERSE CURVATURE
MODIFY ONE OR MORE POLYGON PARAMETERS
NO CONVERGENCE
COMPARE DEFORMATION CURVATURE WITH SUPERIMPOSED FF CURVES
CONVERGENCE
CONSTRUCT POLYGON WITH MODIFIED PARAMETERS

2. A method for compensating polygon-type scanners having a plurality of mirrored facet surfaces for the effects of facet surface deformation at rotational load including the steps of:

analytically determining at least a 2 dimensional radial curvature deformation each facet will undergo at operational rotational load and

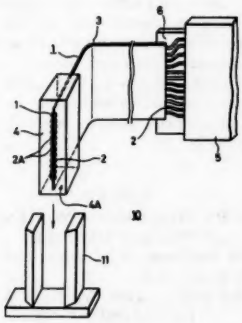
forming the reverse amount of deformation on said polygon facet surfaces so as to compensate for said deformation effects, wherein the facet surfaces are deformed to assume a flat orientation at said rotational load.

5,083,139

THERMAL HEAD FORMED OF A FLAT CABLE ENCAPSULATED IN A SUPPORTING BODY

Mitsuo Sakamoto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 5, 1991, Ser. No. 680,827
Claims priority, application Japan, Apr. 6, 1990, 2-37208[U]
Int. Cl.[5] B41J *2/395*
U.S. Cl. 346—76 PH 8 Claims



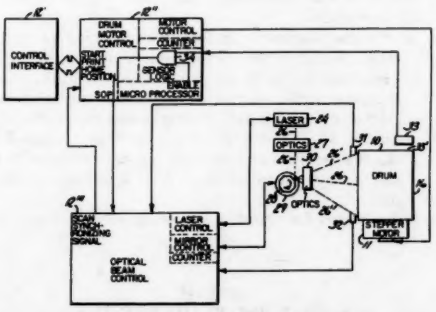
1. A thermal head, comprising:
a parallel flat cable formed of a plurality of parallel electrode wires aligned in a polymer insulating coating; and
a rigid supporting body comprising a bonding agent which is encapsulated over the polymer insulating coating at an end portion of the parallel flat cable, ends of said electrode wires being provided at an end face of the supporting body forming a printing plane.

5,083,140

MULTIPLE CHARGE IMAGES INITIATION WITH SCAN SYNCHRONIZATION

Ronald C. Peterson, Shorewiew; Keith E. Jasperson, Maplewood, and Robert J. Schilling, Arden Hills, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 10, 1990, Ser. No. 507,378
Int. Cl.[5] G01D *9/42*
U.S. Cl. 346—107 A 13 Claims



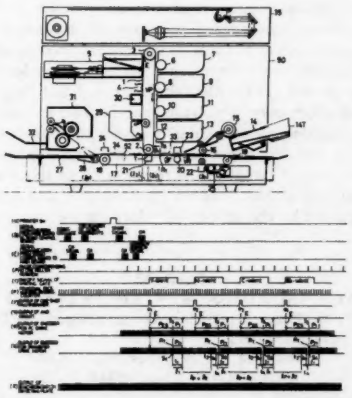
1. A method for repeatably beginning modulation of a scanning laser beam at a selected initial location on an outer surface of a drum rotatable about a rotation axis thereof in each of a succession of selected rotations thereof, said method comprising the steps of:
scanning said laser beam from one side to another over said outer surface of said drum;
sensing each occurrence of said laser beam leaving a scan reference location fixedly positioned with respect to said rotation axis of said drum in its said scanning at said laser beam over said outer surface of said drum;
initiating a rotation of said drum from a selected rotation start position with respect to said rotation axis thereof substantially coinciding with a leaving of said scan reference location by said laser beam;
sensing a selected rotation marker location on said drum passing a selected rotation reference location along that path followed by said reference marker location during a rotation of said drum; and
permitting modulation of said laser beam to begin on a selected occurrence of said laser beam leaving said scan reference location after said rotation marker location on said drum has passed said rotation reference location as said laser beam substantially reaches said initial location on said outer surface of said drum.

5,083,141

IMAGE FORMING APPARATUS

Kazushige Taguchi, Warabe, and Hideya Furuta, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 29, 1990, Ser. No. 574,449
Claims priority, application Japan, Aug. 30, 1989, 1-221637; Nov. 21, 1989, 2-300741; Mar. 5, 1990, 1-51886
Int. Cl.[5] H04N *1/21*
U.S. Cl. 346—108 6 Claims



1. An image forming apparatus comprising:
means for performing a scanning operation using a laser beam by a polygon mirror at a predetermined timing;
writing means for sequentially forming a plurality of images by repeatedly performing an optical writing operation a plurality of times on a photosensitive body;
transfer means for sequentially overlapping and transferring said plurality of images onto a transferred member; and
means for starting the optical writing operation each time by said writing means from the same polygon mirror face.

5,083,142

SEQUENCE CONTROLLER

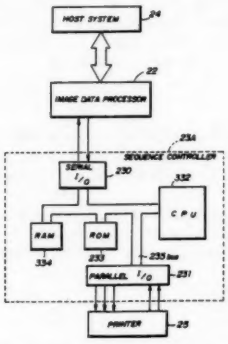
Hiroaki Kotabe, Funabashi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 23, 1990, Ser. No. 556,742
Claims priority, application Japan, Jul. 26, 1989, 1-191371
Int. Cl.[5] G01D *15/24;* G03G *21/00;* G06F *15/00*
U.S. Cl. 346—134 5 Claims

1. A sequence controller which controls an image forming apparatus which includes a plurality of paper supply paths, a plurality of paper eject paths, image forming means, and abnor-

mity informing means for informing an abnormity in the paper supply and eject paths, said sequence controller comprising:

memory means for storing at least image forming information related to a plurality of pages, said image forming information related to each page including image data related to images to be formed by the image forming means and paper path information for selecting one paper supply path and one paper eject path out of the plurality of paper supply and eject paths related to one of the pages; and



control means coupled to said memory means for controlling an image forming operation of the image forming apparatus so as to form an image described by the image information on a recording paper using the selected paper supply and eject paths which are selected by the paper path information which are stored in said memory means;

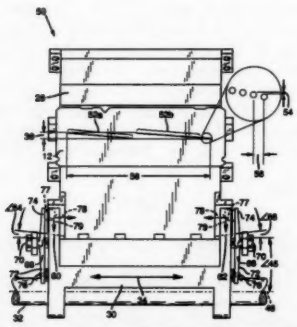
said control means including means for automatically changing at least the paper path information related to an arbitrary one of the pages, in response to an abnormity in at least one of the selected paper supply and eject paths informed by the abnormity informing means.

5,083,143

ROTATIONAL ADJUSTMENT OF AN INK JET HEAD

Eldon P. Hoffman, West Linn, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 26, 1990, Ser. No. 633,840
Int. Cl.[5] G01D *15/16;* **B41J** *11/22*
U.S. Cl. 346—139 R **15 Claims**



1. Apparatus for mounting and adjusting an azimuthal angle of a print head that is attached to a print head carrier, comprising:

a print head carrier having a pair of carrier mounting surfaces and a carrier guide surface, the carrier mounting surfaces being angularly inclined in opposite directions;

a carriage having a pair of carriage mounting surfaces and a carriage guide surface that contact a respective pair of carrier mounting surfaces and the carrier guide surface, the carriage mounting surfaces being angularly inclined in opposite directions and contacting a corresponding reservoir mounting surface of the same direction of inclination; and

urging means operatively connected to the carrier and the carriage for applying a force with components that simultaneously urge the carrier and carriage guide surfaces against each other and translate the carrier and carriage guide surfaces relative to each other,

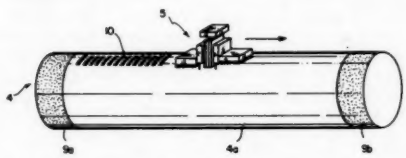
whereby the inclined mounting surfaces of the carrier and carriage move relative to each other in the direction of co-respective inclinations to change the azimuthal angle of the print head.

5,083,144

ELECTROPHOTOGRAPHIC WITH SCANNING PROCESS MODULE

Conrad Altmann, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 31, 1990, Ser. No. 636,156
Int. Cl.[5] G01D *15/06*
U.S. Cl. 346—157 **26 Claims**



1. An electrostatographic print engine responsive to image information for producing a corresponding hard copy image reproduction, comprising:

an endless support driven along an endless path about an axis, said support having a first segment for reserving a predetermined quantity of colored marking particles and a second adjacent segment axially disposed with respect to said first segment and having a photoreceptive surface;

a process module movable between the first segment and the second segment for producing transferable developed images on said photoreceptive surface, said process module comprising:

(a) charging means for uniformly establishing an electrostatic charge on the photoreceptive surface,

(b) exposure means for imagewise exposure of the photoreceptive surface to provide a latent electrostatic image,

(c) development means including means for picking up a portion of the reserved colored marking particles from the first segment and for applying such particles to the electrostatic latent image to form a developed image; and

transfer means for transferring the developed image to a receiver.

5,083,145

NON-ARCING BLADE PRINTER

Robert W. Gundlach, Victor, and Richard F. Bergen, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

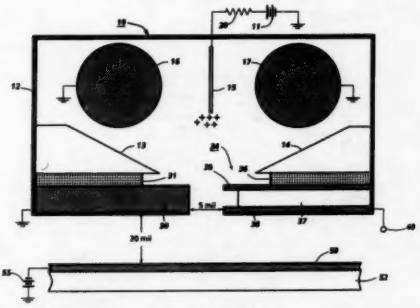
Filed Jun. 27, 1990, Ser. No. 544,560
Int. Cl.[5] G01D *15/06;* **H01T** *19/04;* **G03G** *15/02*
U.S. Cl. 346—159 **10 Claims**

1. In an electrostatographic marking apparatus for placing electrostatic charges upon a charge receptor including a slit through which charges exit, the improvement in the electro-

statographic marking apparatus of a charging device adapted to direct a uniform charge stream into the slit, comprising:

a corona producing means in the form of a thin conductive strip configured edge-on so as to present a small radius to the slit;

electrode means positioned on opposite sides of said conductive strip; and



high voltage means connected to said corona producing means and adapted to apply sufficient voltage to said corona producing means that corona ions are emitted from said corona producing means toward a surface to be charged, and wherein said electrode means serves to tailor field distribution lines from said conductive strip in order to provide maximum charge toward said slit with minimal possibility of arcing.

5,083,146

ZOOM LENS CAMERA

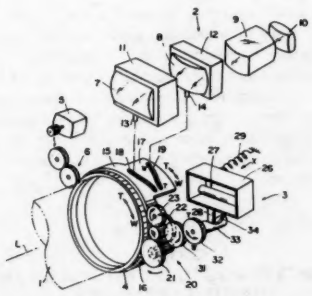
Toshiaki Ueda, Saitama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1990, Ser. No. 588,767

Claims priority, application Japan, Oct. 2, 1989, 1-257496; Oct. 4, 1989, 1-259712

Int. Cl.[5] G03B *15/03, 13/12, 3/00*

U.S. Cl. 354—149.1 **13 Claims**



1. A zoom lens camera comprising:

a lens barrel cam ring which rotates about an optical axis of the camera;

a photographic lens system having a variable focal length which is varied in accordance with the rotation of said lens barrel cam ring;

a finder optical system having at least one movable optical member which varies the finder field of view;

a finder driving ring which is rotatable coaxially to and independently of said finder optical system in association with the rotation of said finder driving ring to vary the finder field of view; and

a reduction gear mechanism which reduces rotation of said lens barrel cam ring and transmits the reduced rotation to said finder driving ring.

5,083,147

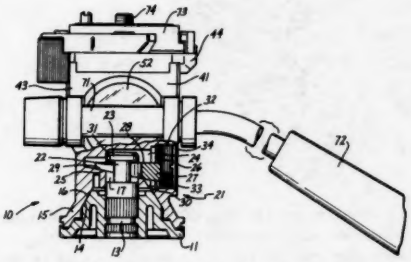
PANHEAD

Koichiro Nakatani, Tokyo, Japan, assignor to Velbon International Corporation, Torrance, Calif.

Continuation-in-part of Ser. No. 302,011, Jan. 26, 1989. This application Jul. 6, 1989, Ser. No. 376,134

Int. Cl.[5] G03B *17/00*

U.S. Cl. 354—293 **11 Claims**



1. In a panning head for a photographic tripod having a panning body with a first bearing surface seated for slidable rotation about a pan axis on a second bearing surface provided on a base, the improvement comprising:

a male portion on one of said base and panning body extending into a cavity in the other of said base and panning body;

wedge means interposed between portions of said male portion and a wall of said cavity for retaining said male portion against withdrawal from said cavity, said wedge displaceable transversely to said pan axis for urging said base and panning body into variable frictional engagement to a degree determined by the position of said wedge means; and

screw means threaded into and extending laterally from said panning body and connected to said wedge means for adjusting the position of said wedge means;

said screw means including an extension engaged for linear movement with said wedge means but rotatable in relation to said wedge means.

5,083,148

DRIVING POWER TRANSMITTING DEVICE FOR CAMERA

Takayuki Tsuboi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 608,611, Oct. 31, 1990, abandoned, which is a continuation of Ser. No. 497,836, Mar. 22, 1990, abandoned, which is a continuation of Ser. No. 393,815, Aug. 11, 1989, abandoned, which is a continuation of Ser. No. 897,336, Aug. 15, 1986, abandoned. This application Apr. 29, 1991, Ser. No. 696,253

Claims priority, application Japan, Aug. 20, 1985, 60-181031; Aug. 20, 1985, 60-181032; Aug. 20, 1985, 60-181033

Int. Cl.[5] G03B *1/00, 13/36, 5/00, 7/00*

U.S. Cl. 354—400 **67 Claims**

1. A camera or a driving power transmitting device for a camera comprising:

(A) drive means for generating a driving power;

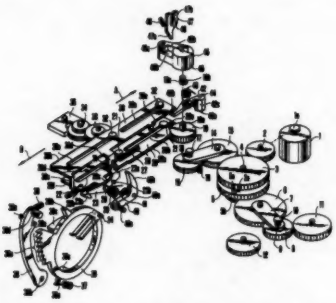
(B) first rotating means for rotation by the driving power of said drive means;

(C) a first operating portion of the camera for operating in response to rotation of said first rotating means;

(D) second rotating means for rotating in response to rotation of said first rotating means;

(E) a second operating portion of the camera for operating in response to rotation of said second rotating means;

(F) connecting means for causing said second rotating means to rotate in unison with said first rotating means after said first rotating means has rotated in a prescribed direction; and



(G) a third operating portion of the camera for operating in association with the rotation of said first rotating means while the first rotating means rotates in said prescribed direction until the second rotating means rotates in unison with the first rotating means, said third operating portion including an automatic focusing adjustment portion.

5,083,149

CAMERA

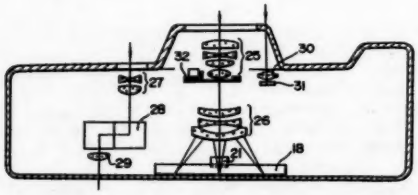
Yoshinobu Kudo, and Yoshiaki Hata, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 16, 1990, Ser. No. 509,296

Claims priority, application Japan, Apr. 17, 1989, 1-96865; Apr. 17, 1989, 1-96866

Int. Cl.[5] G03B *7/099, 9/08, 13/04, 13/36*

U.S. Cl. 354—402 **22 Claims**



1. A camera comprising:

a photographing optical system including photographing lenses capable of performing zooming;

a viewfinder optical system composed of an optical system different from those of said photographing lenses;

photometric means, having an optical system different from those of said photographing lenses, for performing a photometry of an object; and

focus condition detecting means for detecting the focus condition of the object based on a light which has passed through said photographing lenses.

5,083,150

AUTOMATIC FOCUSING APPARATUS

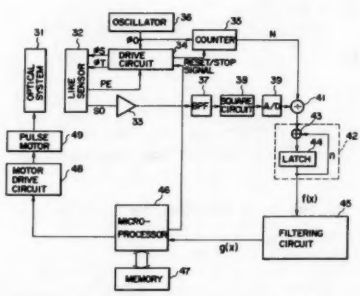
Tatsuo Nagasaki, Yokohama, and Yasuhiro Komiya, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1990, Ser. No. 485,646

Claims priority, application Japan, Mar. 3, 1989, 1-51423; Dec. 8, 1989, 1-319473; Dec. 12, 1989, 1-320625

Int. Cl.[5] G03B *3/00, 13/18*

U.S. Cl. 354—402 **22 Claims**



1. An automatic focusing apparatus comprising:

a photographing optical system for forming an optical image of an object;

an image pickup element for converting the optical image formed by said photographing optical system into an electrical signal;

driving means for changing a relative position between said photographing optical system and said image pickup element;

means for reading the electrical signals obtained at different relative positions as image signals while the relative position is changed by said driving means;

frequency extracting means for extracting frequency components of the same specific frequency bands from the image signals sequentially read by said reading means;

means for converting the frequency components extracted by said frequency extracting means to a signal having positive values;

focusing signal generating means for adding the positive values to generate a focusing signal having values; and

in-focus position operating means for selecting a predetermined signal value from the plurality of signal values of the focusing signal, for calculating the in-focus position by using the selected signal value, for calculating a defocus amount from the in-focus position, and for outputting a drive signal corresponding to the defocus amount to said driving means.

5,083,151

DEVELOPER DEPOSITING UNIT FOR AN IMAGE FORMING APPARATUS

Yoshiyasu Honma, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 30, 1991, Ser. No. 693,609

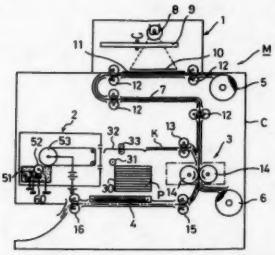
Claims priority, application Japan, Jun. 15, 1990, 2-63745[U]

Int. Cl.[5] G03B *27/52*

U.S. Cl. 355—27 **17 Claims**

1. In a developer depositing unit for an image forming apparatus having a carrying member for carrying a developer and a supplying member for supplying the developer to the carrying member, the developer depositing unit electrostatically depositing the developer on a support member by frictional charging of the developer by the carrying member and the supplying member to displace the frictionally charged devel-

oper onto the support member by use of an oppositely charged attracting means to the frictionally charged developer, an



improvement comprising a grounded conductive brush in contact with at least the carrying member.

5,083,152

PHOTOGRAPH PROCESSING DEVICE

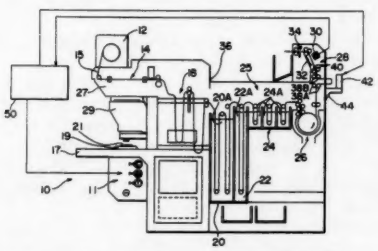
Kanji Tokuda, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 24, 1990, Ser. No. 556,509

Claims priority, application Japan, Jul. 28, 1989, 1-196240; Jun. 6, 1990, 2-147873

Int. Cl.[5] G03B *27/80*

U.S. Cl. 355—27 **24 Claims**



1. A photograph processing device comprising

an exposing section for printing an image on a light-sensitive material in accordance with exposure conditions,

a processor section for performing developing, fixing, washing and drying operations with respect to the printed light-sensitive material,

image density measuring means provided in the vicinity of the light-sensitive material exit side of the processor section for photometering the light-sensitive material, the density measuring means providing an image density signal free from the influence of temperature that is caused by subjecting the light-sensitive material to the drying operation, and

exposure condition correcting means for correcting the exposure conditions in accordance with the image density signal provided from the density measuring means.

5,083,153

FILM TRANSPORTING APPARATUS

Jack C. DeMarti, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 17, 1990, Ser. No. 568,802

Int. Cl.[5] G03B *27/52*

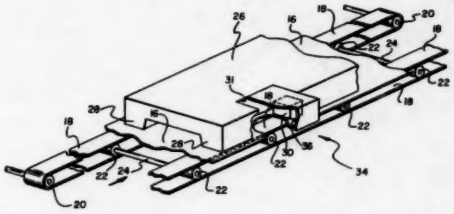
U.S. Cl. 355—40 **8 Claims**

1. A photographic printing apparatus for use with a photographic film having a magnetic information track and successive image areas, said printing apparatus comprising:

means defining a printing aperture;

a magnetic head located proximate one side of said printing aperture for reading and/or recording information on a magnetic information track of a photographic film; and

belt means for transporting successive image areas of a photographic film over said printing aperture and simultaneously for supporting a magnetic information track on a photographic film in reading and/or recording relationship with said magnetic head.



5,083,154

COPYING APPARATUS, PRINT EVALUATING METHOD FOR COPYING APPARATUS, METHOD FOR SETTING PRINTING CONDITIONS, AND COPYING APPARATUS CONTROLLER

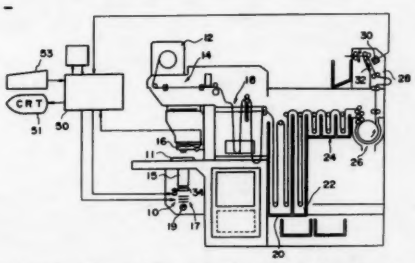
Takaaki Terashita, and Fumiaki Sato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 27, 1991, Ser. No. 676,039

Claims priority, application Japan, Apr. 2, 1990, 2-88067; Apr. 10, 1990, 2-94629; Apr. 10, 1990, 2-94630; Apr. 19, 1990, 2-103892; Apr. 20, 1990, 2-104875

Int. Cl.[5] G03B *27/74, 27/80*

U.S. Cl. 355—68 **25 Claims**



1. A method for evaluating a print, comprising the steps of:

developing in a film developing section a film-development evaluating film with a series of evaluating latent images, different in density, recorded thereon;

printing onto a paper the image on the film obtained by development;

developing the printed paper in a paper developing section; and

measuring a density of a print obtained by development so as to evaluate the quality of the print.

5,083,155

CARTRIDGE FOR DEVELOPED PHOTOGRAPHIC FILM

Hideaki Kataoka, and Nakao Oi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 18, 1990, Ser. No. 584,017

Claims priority, application Japan, Sep. 18, 1989, 1-240978

Int. Cl.[5] G03B *27/62, 17/26, 1/04*

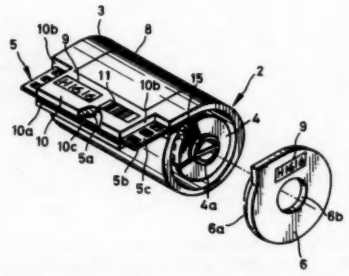
U.S. Cl. 355—75 **22 Claims**

1. A cartridge for containing a photographic film with perforations formed on both side portions thereof, said cartridge comprising:

a spool on which said photographic film is wound;

a cartridge body for rotatably containing said spool;

a port portion, formed on said cartridge body, and having a film passage mouth, for allowing said photographic film to pass therethrough; and



a notch, formed in said port portion, for causing said perforations to be exposed therethrough, wherein said photographic film is a developed photographic film, said cartridge storing said developed photographic film.

5,083,156

VACUUM CONTACT PRINTING DEVICE AND EXPOSURE APPARATUS AND ORIGINAL CONTACT DEVICE

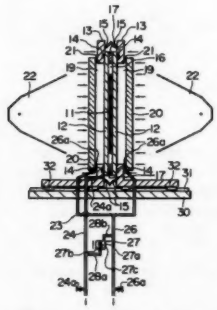
Toshiyuki Sato; Hiroyuki Hashimoto, and Kazuo Watanabe, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Filed Mar. 7, 1991, Ser. No. 666,081

Claims priority, application Japan, Mar. 16, 1990, 2-65603; Mar. 16, 1990, 2-65604; Mar. 16, 1990, 2-65605

Int. Cl.[5] G03B *27/20*

U.S. Cl. 355—91 **22 Claims**



1. A vacuum contact printing device comprising:

a pair of frame members which support originals at both sides of a base member having both surfaces coated with a photosensitive material and which define a first vacuum chamber between said originals;

transparent plate members supported by said frame members and disposed so as to define second vacuum chambers between the transparent plate members and the originals on both sides of the base member;

vacuum means for exhausting air in said first and second vacuum chambers to substantially reduce inner pressure thereof and releasing a vacuum condition in at least said second vacuum chambers; and

lighting means arranged outside said plate members for irradiating an exposure light.

5,083,157

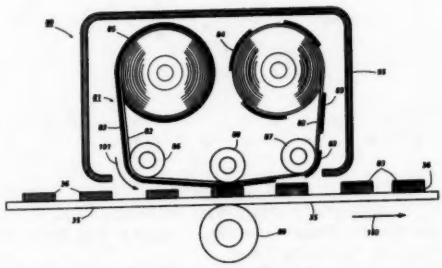
APPLICATION OF MICR MEDIA TO XEROGRAPHIC IMAGES

Wayne R. Smith, Pittsford, and William A. Sullivan, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 20, 1990, Ser. No. 630,907

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—200 **20 Claims**



1. In an electrophotographic printing machine of the type in which a non-magnetic toner image is transferred to a copy substrate from a photoconductive member and fused thereto, the improvement for creating MICR readable images out of the previously fused non-magnetic images, comprising:

a substrate containing non-magnetic images on a surfaces thereof;

a film including a heat resistant backing member and a magnetite media adhered thereto; and

a heater member positioned adjacent said backing member and adapted to contact said backing member and press said magnetite media against predetermined portions of said non-magnetic images in order to heat the same and thereby cause said magnetite media to fuse to said non-magnetic images and thereby render the resultant images readable by MICR readers.

2. The improvement of claim **1**, wherein said film is positioned within a cassette.

5,083,158

PHOTOCONDUCTIVE CARTRIDGE HAVING SHUTTER LOCKING DEVICE FOR HOLDING OPENING OF THE CARTRIDGE IN CLOSED POSITION

Hiroyuki Kashima, Nagoya; Kiyoshi Muto, Yokkaichi; Naohisa Kinoshita, Nagoya; Toshihiro Tsuzuki, Kariya, and Makoto Hasegawa, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Japan

Filed Oct. 15, 1990, Ser. No. 597,341

Claims priority, application Japan, Oct. 25, 1989, 1-124751[U]

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—200 **22 Claims**

1. A photoconductive cartridge removably mounted on a photographic recording apparatus, comprising:

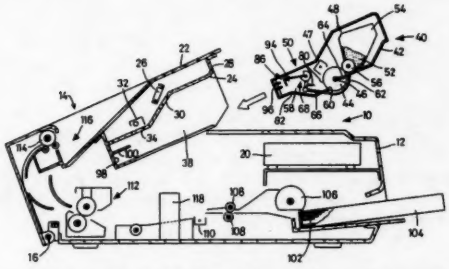
a photoconductive body;

a casing having an opening for exposure of the photoconductive body to an outside of the casing;

a shutter having a closed position in which the opening is closed by the shutter and an open position in which the opening is open; and

a locking device including a first engaging member movable with said shutter, a second engaging member having a first position in which said second engaging member engages said first engaging member to thereby prevent a movement of said first engaging member and a movement of said shutter from said closed position to said open posi-

tion, and a second position in which said second engaging member is released from said first engaging member, and



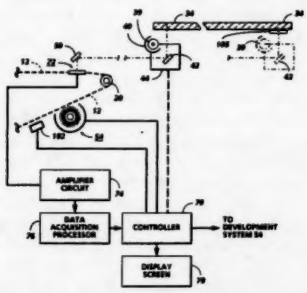
biasing means for biasing said second engaging member toward said first position.

5,083,159

PROCESS FOR INITIAL ALIGNMENT OF DOCUMENT ILLUMINATOR

Stephen C. Corona, Rochester; George A. Charnitski, Fairport, both of N.Y.; Richard F. Lehman, Nashua, N.H., and Charles J. Urso, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 30, 1991, Ser. No. 707,512
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—208 **3 Claims**



1. A method for providing initial optimized performance of an illumination and exposure system used to form a latent image at an exposure station of a document on a photosensitive medium, including the steps of:

introducing a linear photosensitive display consisting of a plurality of photodiodes into said exposure station,

energizing an illuminator to produce a light output which is transmitted through said exposure station and is incident along the length of said array,

converting the output of the photosensitive array into video signals representative of the average illumination output of the illuminator,

providing a bar graph on a display screen of said average illumination error superimposed against a horizontal specification line on said display representing a maximum acceptable illumination level, and

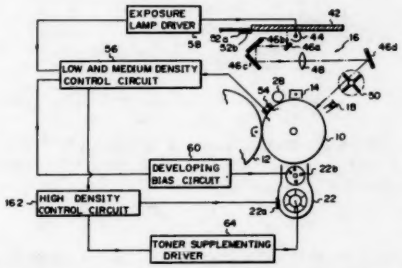
positioning said illuminator while observing said bar graph and selecting that alignment position of the lamp at which the bar graph is at a minimum value relative to said specification line.

5,083,160

IMAGE DENSITY CONTROL METHOD AND COLOR IMAGE FORMING APPARATUS

Kohji Suzuki, Yokohama; Masao Masumura, Tokyo; Hajime Oyama, Ichikawa, and Shinichi Namekata, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 289,253, Dec. 23, 1988, abandoned. This application Dec. 13, 1990, Ser. No. 626,334
Claims priority, application Japan, Dec. 25, 1987, 62-329023; Dec. 25, 1987, 62-329024
Int. Cl.[5] G03G *15/01, 15/08*
U.S. Cl. 355—208 **6 Claims**



1. A color balance control method for use in an image forming system in which a full color image is formed by superposing toner images decomposed into three colors of yellow, magenta and cyan by means of an electrophotographic method, comprising the steps of:

correcting a supplement of toner in response to an output of a toner density sensor in a developing device;

forming unfixed toner images onto a photosensitive body for each color of the three colors, the unfixed toner images corresponding to each of a medium density reference image and a low density reference image, said low density reference image corresponding to a background potential of a photosensitive member, and said unfixed toner images corresponding to said low density reference image being influenced by a fluctuation of the background potential of a photosensitive member;

sensing the unfixed toner images for each color by means of a photoelectric sensor for sensing a deposited quantity of toner;

correcting exposure of scanning light onto an original document on the basis of a ratio of a sensed value of the medium density reference image to a sensed value of the low density reference image thereby to balance a medium density portion of color decomposed images for each color;

correcting developing bias voltage on the basis of the sensed value of the low density reference image thereby to balance a low density portion of the color decomposed images for each color; and

correcting a reference value to be used in a correction for the supplement of toner on the basis of the sensed results of the sensing step.

5,083,161

DENSITOMETER FOR MEASURING DEVELOPABILITY

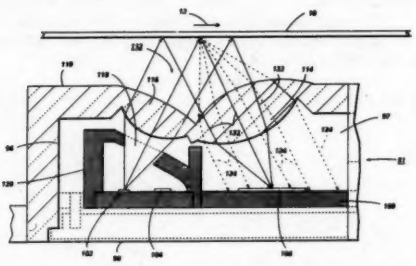
Michael D. Borton, Ontario; Fred F. Hubble, III, Rochester; James P. Martin, Rochester; Theresa K. Mattioli, Rochester, and Ralph A. Shoemaker, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 25, 1989, Ser. No. 398,597
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—208 **32 Claims**

1. An apparatus for measuring the reflectivity of a selected region of a surface covered at least partially with particles; including:

means for generating a first signal proportional to the diffuse

component of the total reflectivity of the selected region of the surface covered at least partially with particles and a first reference signal proportional to the diffuse component of the total reflectivity of a region of the surface without particles thereon; and



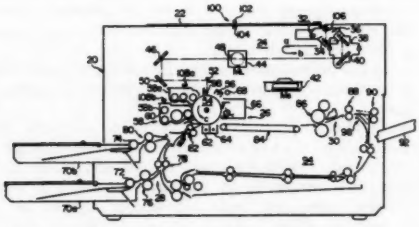
means for determining a control signal as a function of the difference between the first signal and the first reference signal.

5,083,162

IMAGE DUPLICATING APPARATUS INCLUDING AN EDITING FUNCTION

Hiroyuki Hanamoto; Kimihiko Higashio, and Masazumi Ito, all of Aichi, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 139,311, Dec. 29, 1987, abandoned.
This application Oct. 3, 1989, Ser. No. 418,719
Claims priority, application Japan, May 28, 1987, 62-133091; Jun. 8, 1987, 62-143552; Jun. 8, 1987, 62-143553; Jun. 8, 1987, 62-143554; Jun. 8, 1987, 62-143555; Jun. 8, 1987, 62-143556; Aug. 8, 1987, 62-143551
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—218 **33 Claims**



1. An image duplicating apparatus comprising

a) means for designating a plurality of localized areas of a document sheet bearing visible images,

b) first input means for entering conditions relating to the formation of the images within each of the designated areas, the conditions to be entered by the first input means being different from one of the designated areas to another,

c) second input means for entering conditions relating to the formation of the images outside said designated areas, and

d) image reproducing means capable of duplicating the images on the whole area of the document sheet onto a single face of a copying sheet, the image reproducing means having an anamophoscopic function to duplicate images on a document sheet with one magnification/reduction ratio selected for one orthogonal axes and another magnification/reduction ratio selected for another orthogonal axes,

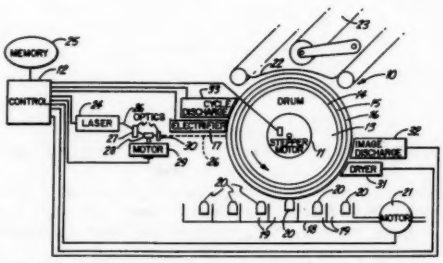
e) wherein the images within each of the designated areas of the document are duplicated onto said single face of the copying sheet in accordance with the conditions entered by said first input means and the images outside said designated areas of the document are duplicated onto said single face of the copying sheet in accordance with the conditions entered by said second input means.

5,083,163

PHOTOCONDUCTOR RESETTING FOLLOWING MULTIPLE CHARGE IMAGES

David E. Brown, St. Paul, Minn., and Gregory L. Zwadlo, Ellsworth, Wis., assignors to Minnesota Mining & Manufacturing Company, Saint Paul, Minn.

Filed Jul. 16, 1990, Ser. No. 552,698
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—219 **21 Claims**



1. A method for repeated electrical charging of a photoconductor layer on an electrical conductor provided at least as part of an exterior of a drum so that at least portions of an outer surface of said photoconductor layer are brought substantially to a selected initial surface potential after each of selected ones of such chargings, said method comprising:

charging said photoconductor layer outer surface to said initial surface potential through depositing electrical charge substantially uniformly over at least a part thereof as said drum rotates about an axis of rotation thereof;

directing a discharge electromagnetic radiation beam onto a first set of selected locations on said photoconductor layer outer surface, as previously charged, of sufficient intensity to thereby discharge portions of said photoconductor layer adjacent said first set of selected locations therein;

providing a first toner at said photoconductor layer outer surface with portions of said first toner remaining at locations on said photoconductor layer outer surface determined by which portions of said photoconductor layer have been discharged by said discharge electromagnetic radiation beam;

providing first erasure electromagnetic radiation on said photoconductor layer outer surface both at locations free of said first toner and at locations where said first toner is present through said first toner being capable of transmitting therethrough a substantial portion of said first erasure electromagnetic radiation, said first erasure electromagnetic radiation having wavelengths in a first spectral distribution;

transferring substantially all of said portions of first toner from said photoconductor layer outer surface to a transfer means; and

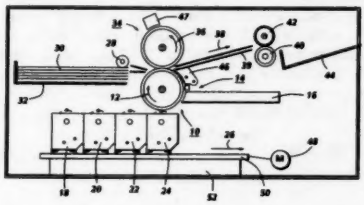
providing termination electromagnetic radiation on said photoconductor layer outer surface, said termination electromagnetic radiation having wavelengths in a termination spectral distribution substantially all of which are shorter than those wavelengths contained in said first spectral distribution.

5,083,164

DEVELOPMENT MODULE FOR A COLOR PRINTER

Venkatesh H. Kamath, and Lam F. Wong, both of Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 11, 1991, Ser. No. 666,955
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—245 12 Claims



1. An apparatus for developing latent images recorded on a photoconductive member with different color toner at a development zone, including:

at least four developer units adapted to move in unison with one another, each developer unit develops the latent image recorded on the photoconductive member with a different color toner; and

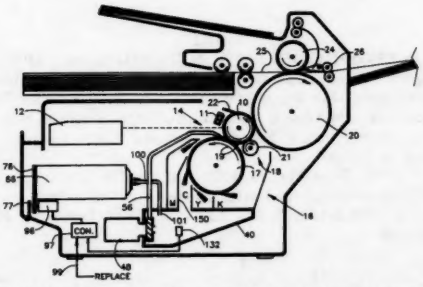
means for moving said developer units in an ordered sequence during each development cycle with the first developer unit being the first developer unit positioned in the development zone during the development cycle, the second developer unit, located adjacent the first developer unit, being the fourth developer unit positioned in the development zone during the development cycle, the third developer unit, located adjacent the second developer unit, being the second developer unit positioned in the development zone during the development cycle, and the fourth developer unit, located adjacent the third developer unit, being the third developer unit positioned in the development zone during the development cycle.

5,083,165

LIQUID TONER REPLENISHMENT SYSTEM

Benzion Landa, Edmonton, Canada, assignor to Spectrum Sciences B.V., Wassenaar, Netherlands

Filed Aug. 22, 1990, Ser. No. 570,777
Int. Cl.[5] G03G *15/10*
U.S. Cl. 355—256 24 Claims



1. Liquid toner imaging apparatus for producing an image on a substrate and having carrier liquid and toner particle carryout on the average in a first ratio, the apparatus comprising:

an image bearing surface;

means for developing an image on the image bearing surface using a liquid toner including carrier liquid and toner particles; and

means for transferring a developed image from the image bearing surface to the substrate,

wherein the means for developing comprises:

a liquid toner reservoir;

supply apparatus comprising a replaceable container initially containing toner concentrate, including carrier liquid and toner particles, therein and having an opening communicating with the reservoir; and

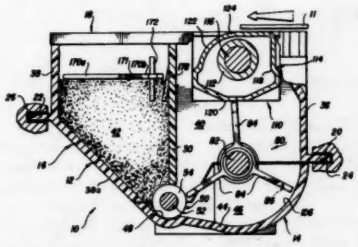
replenishment means for causing transfer of toner concentrate from the replaceable container to the reservoir to replenish the toner and for causing transfer of contents of the reservoir to the replaceable container to remove excess liquid toner from the reservoir.

5,083,166

DISPOSABLE DEVELOPMENT STATION USING TWO COMPONENT DEVELOPER AND METHOD OF MAKING SAME

Lawrence A. Hill, Rochester; Michael E. Jacobs, Henrietta; Arthur S. Kroll, and Ralph E. Williams, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 358,457, May 25, 1989, abandoned, which is a continuation of Ser. No. 116,294, Nov. 3, 1987, abandoned. This application Oct. 20, 1989, Ser. No. 424,634
Int. Cl.[5] G03G *15/06, 21/00*
U.S. Cl. 355—260 7 Claims



1. A disposable development station comprising:

an elongate plastic housing having a vertically oriented separating wall running longitudinally of the housing and dividing the housing into first and second chambers, said chambers being separately loadable from the top, the first chamber containing a mixture of toner and carrier and the second chamber containing substantially toner;

toner applying means located in an upper portion of the first chamber;

rotatable means positioned in an opening below the vertically oriented separating wall for metering toner from the second chamber to the first chamber; and

a cover permanently sealing the tops of both said first and second chambers, said cover defining an opening communicating with said toner applying means.

5,083,167

IMAGE FORMING APPARATUS FOR SUPPLYING DIFFERENT AMOUNTS OF ELECTRIC CHARGE TO AN END PORTION OF A TRANSFER MATERIAL

Satoru Fukushima, Tokyo; Kenichi Takeda, Yokohama; Atsushi Takeda, Kawasaki; Yoshio Uchikawa, Yokohama, and Takashi Hasegawa, Matsudo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 7, 1990, Ser. No. 519,764
Claims priority, application Japan, May 9, 1989, 1-115533; Aug. 31, 1989, 1-225376; Aug. 31, 1989, 1-225378
Int. Cl.[5] G03G *15/16*
U.S. Cl. 355—274 103 Claims

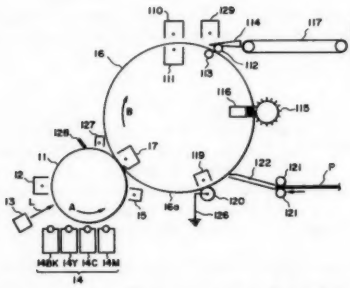
1. An image forming apparatus comprising:

a movable image bearing member;

image forming means for forming a toner image on said image bearing member;

transfer means for electrostatically transferring the toner image from said image bearing member onto a transfer material at an image transfer position;

transfer material carrying means for carrying the transfer material to the transfer position;



wherein said transfer means supplies different electric charge amounts per unit area to an end portion of the transfer material in a direction of conveyance of the transfer material by said transfer material carrying means and to another portion of the transfer material,

wherein said transfer material carrying means has a carrying surface made of dielectric material.

5,083,168

FIXING DEVICE AND FIXING HEATER FOR USE IN THE SAME

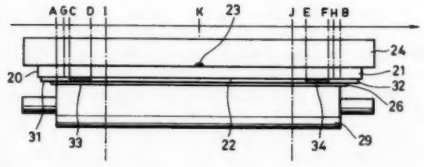
Kensaku Kusaka, Kawasaki; Yoshihiko Suzuki, Tokyo; Shigeo Kimura, Yokohama; Atsushi Hosoi, Kawasaki; Hiroyuki Adachi, Tokyo, and Masahide Kinoshita, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1989, Ser. No. 430,437

Claims priority, application Japan, Nov. 15, 1988, 63-287940; Nov. 25, 1988, 63-297369

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—285 **46 Claims**



1. A fixing device comprising:

a heating element which remains in a fixed state during a fixing operation;

a film slidable relative to said heating element and movable with a recording material supporting a toner image which is heated by said heating element through said film,

wherein said heating element includes:

a substrate;

a heat generating layer provided on the film side of said substrate

electrodes through which said heat generating layer is energized, said electrodes being coated on said substrate so as to leave an open portion on the substrate surface; and

an electrical contact point coated on said open portion on said substrate surface, said electrical contact point melting at a temperature higher than a fixing temperature for said toner image and lower than a withstanding temperature of said electrodes and of said substrate, said open portion provided on a side of said substrate opposite to the side on said heat generating layer is provided.

5,083,169

DEVICE FOR REMOVING DEPOSITS FROM A PHOTOCONDUCTIVE ELEMENT OF AN IMAGE RECORDER WHICH IS MOVABLE BETWEEN A CLEANING AND NON-CLEANING POSITION

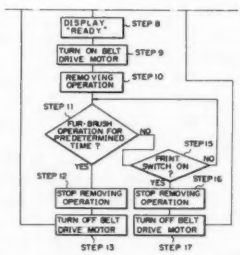
Noriyuki Usui, Kawasaki, and Hidenobu Endo, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 334,218, Apr. 6, 1989. This application Oct. 25, 1989, Ser. No. 426,400

Claims priority, application Japan, Apr. 6, 1988, 63-83054; Apr. 19, 1988, 63-94665; Nov. 10, 1988, 63-282469

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—296 **22 Claims**



1. A device for removing deposits from a surface of a photoconductive element which is installed in an image recorder, comprising:

removing means for removing the deposits in contact with the surface of the photoconductive element;

driving means for driving said removing means into and out of contact with the surface of the photoconductive element;

means for stopping the removing operation of said removing means after said removing means has operated for a predetermined period of time which comprises at least one full rotation of said photoconductive element; and

override means for immediately stopping the removing operation of said removing means before said removing means has operated for said predetermined period of time, when a command for causing the image recorder to start on a recording operation is entered while said removing means is in operation.

5,083,170

ELECTROPHOTOGRAPHIC RECORDING APPARATUS

Shigeru Sawada; Mitsuaki Maruyama; Kenji Sawada; Hitoshi Nakagawa; Jun Tsujimoto; Shinichi Kasai; Masahiko Takeshita; Satoshi Kaneta; Masahiro Koiwai, and Hiroshi Niki, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Apr. 16, 1990, Ser. No. 508,713

Claims priority, application Japan, Apr. 14, 1989, 1-95005; May 2, 1989, 1-113076; Jun. 22, 1989, 1-161847; Jun. 29, 1989, 1-167381

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—319 **5 Claims**

1. An electrophotographic recording apparatus, comprising:

means for inletting a sheet into which a recording sheet is inserted;

means for feeding said recording sheet to said sheet inlet means;

means, having a photosensitive drum, for forming a printing image on said photosensitive drum based on printing data and for transferring said printing image onto said recording sheet;

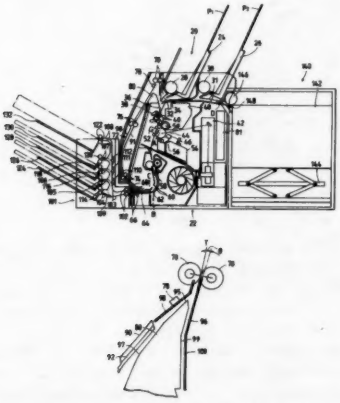
means for fixing said transferred printing image on said recording sheet;

discharge roller means arranged downstream of said fixing means for discharging and recording sheet which has been printed;

means for switching the direction of feeding said recording sheet supplied from said fixing means in first and second directions;

means for guiding said recording sheet having a portion thereof which is connected to said switching means when said switching means switches the sheet feeding direction in said first direction, and an outlet thereof which is located above said sheet inlet means;

means for detecting a tail end of said recording sheet, said detecting means being arranged on an end portion of said sheet guide means;



sheet take-out roller means, located downstream of said detection means, for forwarding said recording sheet, which is fed through said sheet guide means upward and downward by reverse rotation according to an output signal from said detecting means;

a fixed sheet forwarding path switching member having a substantially triangular cross-section, positioned with an apex thereof adjacent to both said sheet takeout roller means and said detecting means and configured such that when the sheet direction is reversed by the reverse rotation of said sheet takeout means, the sheet is prevented from entering the upward sheet guide path; and

reading means for writing said printing data from a last line onward to said photosensitive drum when rear-side printing is performed.

5,083,171

IMAGE SENSOR

Katsuaki Komatsu, and Hideo Watanabe, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

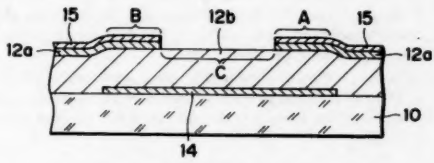
Continuation of Ser. No. 337,210, Apr. 12, 1989, abandoned.
This application May 29, 1990, Ser. No. 534,320
Claims priority, application Japan, Apr. 20, 1988, 63-95764
Int. Cl.[5] H01L *29/48*
U.S. Cl. 357—15 **2 Claims**

1. An image sensor comprising a plurality of photoelectric transducers arranged in an array on a single substrate and driven by a plurality of matrix wirings, each of said transducers including a photodiode and a blocking diode, each of said photodiodes and said blocking diodes comprising:

a light-receiving side electrode consisting essentially of indium-tin-oxide, said light-receiving side electrode having a thickness within a range of 500 Å to 2,000 Å;

a ohmic contact electrode consisting essentially of an element selected from the group consisting of Cr, Al, and Ti;

a semiconductor layer including an i-type amorphous silicon thin film having a thickness in a range of 0.5 to 2.0 μm and a n^+-type amorphous silicon thin film having a thickness not less than 500 Å isolated between at least adjacent photoelectric transducers and sandwiched between said light-receiving side electrode and said ohmic contact electrode, the i-type amorphous silicon thin film being sandwiched between the light-receiving side electrode and the n^+-type amorphous silicon thin film and the n^+-



type amorphous silicon thin film being sandwiched between the i-type amorphous silicon thin film and the ohmic contact electrode, the i-type amorphous silicon thin film being disposed in common to a plurality of the photodiodes and blocking diodes of the plurality of transducers; and

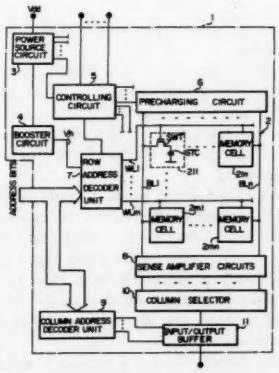
each of said photodiodes and said blocking diodes being formed by a Schottky junction disposed between said light-receiving side electrode and said i-type amorphous silicon thin film, wherein said light-receiving side electrode is disposed in common to said photodiode and said blocking diode.

5,083,172

DYNAMIC RANDOM ACCESS MEMORY DEVICE FABRICATED WITH TWO KINDS OF FIELD EFFECT TRANSISTOR DIFFERENT IN THICKNESS OF GATE OXIDE FILMS

Junji Kiyono, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 25, 1991, Ser. No. 645,837
Claims priority, application Japan, Jan. 25, 1990, 2-16840
Int. Cl.[5] H01L *29/68, 29/06, 27/02, 29/34*
U.S. Cl. 357—23.6 **4 Claims**



1. A dynamic random access memory device fabricated on a semiconductor substrate, comprising:

a) a plurality of memory cells each implemented by a series combination of a switching transistor and a storage capacitor, said switching transistor being formed by a field effect transistor with a first gate insulating film;

b) a plurality of peripheral units provided in association with said memory cells and including a first power source circuit supplied with a power voltage level for distributing the power voltage level, and a second power source circuit supplied with said power voltage level for supplying a higher voltage level than said power voltage level, one of said peripheral units being fabricated from component field effect transistors each having a second gate insulating film thinner than said first gate insulating film, a gate electrode formed on said second gate insulating film being supplied with said power voltage level;

c) a plurality of word lines coupled to said memory cells, one of said word lines being coupled to a gate electrode formed on said first gate insulating film, said gate electrode on said first gate insulating film being supplied with said higher voltage level; and

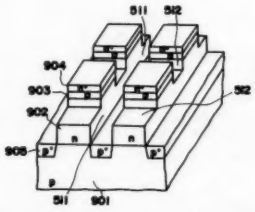
d) discharging means formed in said semiconductor substrate and coupled to each of said word lines through an insulating film thinner than said first gate insulating film.

5,083,173

CHARGE COUPLED DEVICE FOR A SOLID STATE IMAGE PICK-UP DEVICE

Takahiro Yamada, Hirakata, and Sumio Terakawa, Ibaraki, both of Japan, assignors to Matsushita Electronics Corporation and Matsushita Electric Industrial Co., Ltd., both of Kadoma, Japan

Continuation of Ser. No. 128,119, Nov. 30, 1987, abandoned.
This application Dec. 14, 1990, Ser. No. 628,940
Claims priority, application Japan, Nov. 28, 1986, 61-284759
Int. Cl.[5] H01L *29/78, 27/14, 29/06*
U.S. Cl. 357—24 **1 Claim**



1. A charge coupled device for a soild state image pick-up device comprising:

a semiconductor layer of a second conductivity type having plural first oblong grooves in one direction, and plural second oblong grooves perpendicular to and crossing said first oblong grooves, said first oblong grooves being deeper in said semiconductor layer than said second oblong grooves;

an insulation film formed on side walls of said first and second grooves and a surface of said semiconductor layer:

plural stacks each comprising a photoelectric conversion region of a first conductivity type and a read-out gate region of said second conductivity type which are two-dimensionally formed in said semiconductor layer, underneath said isulation film and among said first and second oblong grooves;

plural oblong charge conveying regions of said first conductivity type for conveying signal charge regions which are formed in said semiconductor layer, underneath said read-out gate regions and among said first oblong grooves in a longitudinal direction of said first oblong grooves; and

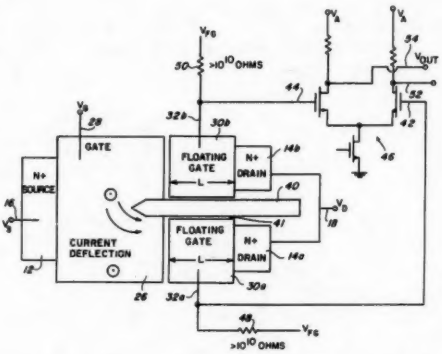
plural gate electrodes formed in said first oblong grooves without overlapping each other.

5,083,174

FLOATING GATE MAGNETIC FIELD SENSOR

Francis J. Kub, Arnold, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 31, 1990, Ser. No. 560,700
Int. Cl.[5] H01L *27/22, 29/68, 29/82, 43/00*
U.S. Cl. 357—27 **15 Claims**



1. A floating gate, magnetic field sensor for sensing the strength of a magnetic field, said sensor comprising:

a MOSFET comprising a silicon material having a source at a first position in said silicon material, and a first drain and a second drain at a second position in said silicon material, a silicon dioxide layer disposed on said silicon material between said first and second positions, and gate means disposed between said first and second positions, said gate means comprising:

(a) a DC gate means, disposed on an upper surface of the silicon dioxide layer adjacent to said source, for receiving a DC voltage and producing, at or near the interface between said silicon material and said silicon dioxide layer, movement of electron charges along a path of travel which is a function of the strength of the magnetic field being sensed;

(b) a first floating gate means, located on an upper surface of the silicon dioxide layer adjacent to said first drain, for providing capacitive coupling to said electron charges beneath said first floating gate means and for outputting a first gate signal indicative of the electron charges therebelow;

(c) a second floating gate means, located on an upper surface of the silicon dioxide layer adjacent to said second drain, for providing capacitive coupling to electron charges beneath said second floating gate means and for outputting a second gate signal indicative of the electron charges therebelow:

(d) an isolating barrier region separating said first floating gate means and said first drain from said second floating gate means and said second drain;

(e) a charge splitter means, located in said barrier region, for preventing charges from accumulating in and adjacent to the region; and

(f) output means connected to the said first and second floating gate means comprising a differential amplifier means having a first differential input connected to receive said first gate signal and a second differential input connected to receive said second gate signal, for providing a differential output signal based on said gate signals related to the strength of said magnetic field.

5,083,175

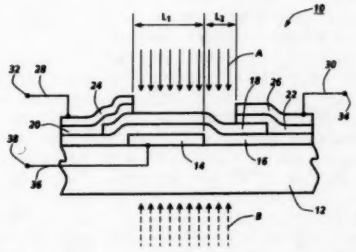
METHOD OF USING OFFSET GATED GAP-CELL THIN FILM DEVICE AS A PHOTOSENSOR

Michael Hack, Mountain View; Malcolm J. Thompson, and Hsing C. Tuan, Menlo Park, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 21, 1990, Ser. No. 586,462

Int. Cl.[5] H01L *27/14*

U.S. Cl. 357—30 14 Claims



1. A method of utilizing a thin film device as a photosensor comprising the steps of

providing a substrate upon which is deposited a charge transport layer, first and second injecting electrodes in electrical contact with said charge transport layer and being laterally spaced from one another, a gate electrode spaced normally from said first and second injecting electrodes and located opposite said first injecting electrode and laterally offset from said second injecting electrode, and a gate dielectric layer separating said gate electrode from said first and second injecting electrodes and said charge transport layer, and being characterized by

applying a first electrical bias of a first magnitude to said first injecting electrode,

applying a second electrical bias of a second magnitude to said second injecting electrode,

inhibiting charge injection from said first injecting electrode by applying a third electrical bias to said gate electrode of a third magnitude,

illuminating said charge transport layer, and

selectively operating said photosensor in one of two modes of operation, said modes being a unity gain mode and a variable gain mode,

wherein said unity gain mode is achieved by causing said second magnitude to be greater than said first magnitude and said variable gain mode is achieved by causing said second magnitude to be less than said first magnitude.

5,083,176

SEMICONDUCTOR DEVICE HAVING INCREASED BREAKDOWN VOLTAGE

John A. G. Slatter, Crawley Down, England, assignor to U.S. Philips Corp., New York, N.Y.

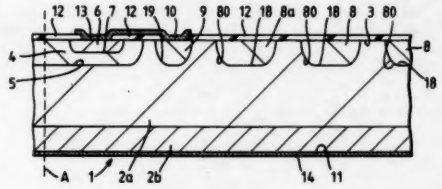
Filed Jan. 7, 1991, Ser. No. 638,230

Claims priority, application United Kingdom, Jan. 10, 1990, 9000531

Int. Cl.[5] H01L *27/14*

U.S. Cl. 357—30 5 Claims

1. A semiconductor device comprising a semiconductor body having a portion of one conductivity type adjacent one major surface, a first active device region forming with said portion a first pn junction which terminates at the one major surface and is reverse-biased in at least one mode of operation of the device, a second active device region provided within the first active device region and forming with the first active device region a second pn junction terminating at the one major surface, and one or more further regions of an opposite conductivity type within said portion adjacent the one major surface and located surrounding and spaced apart from the first pn junction to lie within a spread of the depletion region of the first pn junction in the one mode of operation to increase the reverse breakdown voltage of the first pn junction, characterized in that an additional region of the opposite conductivity type is provided within said portion between and spaced apart



from the first pn junction and one of the further region and an inner one of the further regions, and an electrical connection is provided between the additional region and the second active device region.

5,083,177

THYRISTOR HAVING A LOW-REFLECTION LIGHT-TRIGGERING STRUCTURE

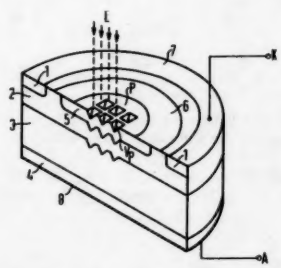
Peter Tuerkes, Unterhaching, and Reinhold Kuhnert, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 12, 1991, Ser. No. 653,968

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1990, 4007817

Int. Cl.[5] H01L *29/74, 29/747, 27/14*

U.S. Cl. 357—38 5 Claims

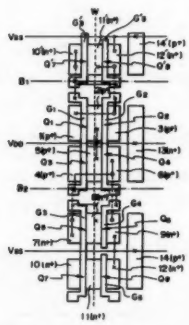


1. A thyristor having a low-reflection light-triggering structure, consisting of at least a sequence of semiconductor layers of alternating conductivity types that has a p-emitter contacted by an electrode of an anode side, an n-base, a p-base and an n-layer for recesses of an n-emitter contacted on a cathode side of an auxiliary emitter, whereby the auxiliary emitter has no electrical contacting but does have a low-reflection photon entry face, comprising the low-reflection photon entry face having pyramidal depressions, the reflectivity of the photon entry face being largely independent of the wavelength of light incident on the photon entry face; and an overhead ignition-resistant thyristor having defined overhead ignition voltage being formed substantially by the pyramidal depressions and a doping boundary surface between the p-base and the n-base that follows the surface contour of the photon entry face.

5,083,178
SEMICONDUCTOR CMOS GATE ARRAY

Takaji Otsu, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 24, 1990, Ser. No. 571,772
Claims priority, application Japan, Aug. 25, 1989, 1-219970
Int. Cl.[5] H01L 27/02
U.S. Cl. 357—40 7 Claims



1. A semiconductor device of a master slice type, comprising a basic cell comprising:

first and second MOS transistors of a first conductivity type in each of which one of a source region and a drain region is commonly used;

third and fourth MOS transistors of the first conductivity type in each of which one of a source region and a drain region is commonly used;

fifth and sixth MOS transistors of a second conductivity type in each of which one of a source region and a drain region is commonly used; and

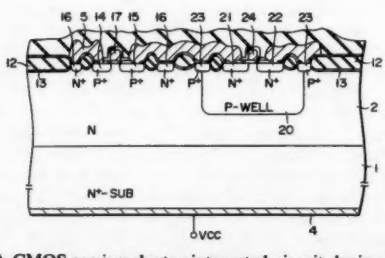
seventh and eighth MOS transistors of the source region and a drain region is commonly used,

gate electrodes of said first and third MOS transistors being commonly used, gate electrodes of said second and fourth MOS transistors being commonly used, and gate electrodes of said fifth and seventh MOS transistors being commonly used.

5,083,179
CMOS SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Teek F. Chong, Yokohama, and Takahiro Ito, Yokosuka, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 26, 1991, Ser. No. 661,013
Claims priority, application Japan, Feb. 27, 1990, 2-46230
Int. Cl.[5] H01L 27/02
U.S. Cl. 357—42 7 Claims



1. A CMOS semiconductor integrated circuit device, comprising:

a semiconductor substrate of a first conductivity type;

an element isolating insulation film formed on said semiconductor substrate;

a plurality of CMOS circuit formed on said semiconductor substrate and surrounded by said element isolating insulation film, each of said CMOS circuits including a P-channel MOS transistor and an N-channel MOS transistor;

a first path of high electric potential for applying a voltage to at least one of said CMOS circuits which has high power consumption, said first path being constructed by first metal wiring layer means formed on said semiconductor substrate and connecting the source region of a P-channel MOS transistor of said at least one of said CMOS circuits to high electric potential terminal means;

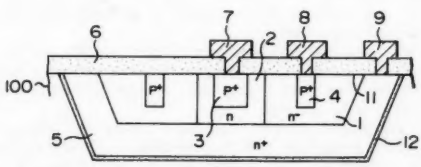
a second path of high electric potential for applying a voltage to other CMOS circuits having lower power consumption, said second path being constructed by said semiconductor substrate with first connecting means for connecting said substrate to a high electric potential terminal means, and second connecting means for connecting said substrate to the source regions of P-channel MOS transistors of said other CMOS circuits; and

a third path of low electric potential constructed by second metal wiring layer means formed on said semiconductor substrate and connecting the source regions of N-channel MOS transistors of all said CMOS circuits to low potential means.

5,083,180
LATERAL-TYPE SEMICONDUCTOR DEVICE

Masato Miura; Tatsuo Shimura, both of Hitachi; Tadaaki Kariya, Naka; Norihiro Kawauchi, Hitachi, and Sinichi Kurita, Mito, all of Japan, assignors to Hitachi Ltd., Tokyo and Hitachi Haramachi Semiconductor, Hitachi, both of, Japan

Filed Oct. 11, 1990, Ser. No. 595,580
Claims priority, application Japan, Oct. 18, 1989, 1-268959
Int. Cl.[5] H01L 29/72
U.S. Cl. 357—43 13 Claims



1. A semiconductor device comprising:

a first semiconductor region of one conductivity tape;

a second semiconductor region of the one conductivity type extending from a main surface of the first semiconductor region toward the inside thereof, the second semiconductor region being higher in impurity concentration than the first semiconductor region;

a third semiconductor region of the other conductivity type extending from the exposed surface of the second semiconductor region toward the inside thereof, the third semiconductor region being higher in impurity concentration than the second semiconductor region;

a fourth semiconductor region of the other conductivity type extending from the main surface of the first semiconductor region toward the inside thereof so that the exposed surface of the second semiconductor region is substantially surrounded by the exposed surface of the fourth semiconductor region, the fourth semiconductor region being higher in impurity concentration than the first semiconductor region;

a fifth semiconductor region of the one conductivity type contiguous to the first semiconductor region, a buried portion of the fifth semiconductor region being connected directly with a bottom portion of the second semiconduc-

tor region, an upper portion of the fifth semiconductor region being exposed to the main surface of the first semiconductor region on the outer-periphery side of the fourth semiconductor region, the fifth semiconductor region being higher in impurity concentration than the first semiconductor region;

a first electrode kept in ohmic contact with the exposed surface of the third semiconductor region;

a second electrode kept in ohmic contact with the exposed surface of the fourth semiconductor region; and

a third electrode kept in ohmic contact with the exposed surface of the fifth semiconductor region.

5,083,181

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND WIRING METHOD THEREOF

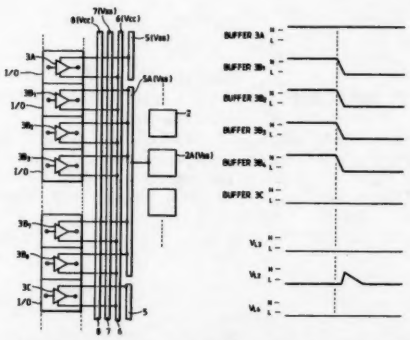
Nobuo Yoshida, Ohme, and Kazuo Koide, Hamura, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 23, 1988, Ser. No. 275,520

Claims priority, application Japan, Nov. 27, 1987, 62-297513

Int. Cl.[5] H01L *27/10, 27/15, 23/48*

U.S. Cl. 357—45 **34 Claims**



1. A semiconductor integrated circuit device comprising:

a semiconductor substrate having a main surface;

a plurality of basic cell lines each of which arranges basic cells having a plurality of transistors, said basic cell lines being positioned at an internal circuit area on said main surface of the semiconductor substrate;

output buffer circuits being formed in input/output (I/O) areas on said main surface of the semiconductor substrate and being positioned around said internal circuit area, said output buffer circuits including first output buffer circuits which are characterized as providing output levels, at respective outputs thereof, which switch substantially simultaneously from one level to another level thereof and second output buffer circuits which are characterized as providing output levels, at respective outputs thereof, associated with switching times that are not simultaneous with that of a said first output buffer circuits;

a first wiring, extending on said I/O areas, for supplying a first fixed potential to said first output buffer circuits; and

a second wiring, extending on said I/O areas, for supplying the first fixed potential to said second output buffer circuits, said second wiring being separated from said first wiring.

5,083,182

DARLINGTON DEVICE WITH AN ULTRA-LIGHTWEIGHT EMITTER SPEED-UP TRANSISTOR

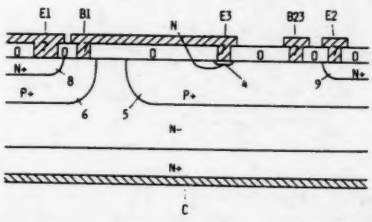
David Ballaro'; Alfonso Patti; Giuseppe Ferla, and Ferruccio Frisina, all of Catania, Italy, assignors to SGS-Thomson Microelectronics SRL, Brinza, Italy

Filed Oct. 24, 1989, Ser. No. 425,981

Claims priority, application Italy, Oct. 28, 1988, 6621 A/88

Int. Cl.[5] H01L *27/02*

U.S. Cl. 357—46 **2 Claims**



1. A Darlington device comprising: a driver transistor; a final transistor; and a transistor acting as a speed-up diode; wherein an emitter region of said transistor acting as a speed-up diode is located in a base region of the final transistor and has a relatively low dopant concentration; and wherein the base regions of said transistors have a surface concentration of dopant of approximately 10^{15} atoms/cm^3 and a depth of approximately 10 μm and wherein an emitter region of said transistor acting as a speed-up diode has a concentration of dopant slightly higher than that of the bases and a depth which is smaller by 1 μm.

5,083,183

SEMICONDUCTOR DEVICE AND METHOD FOR PRODUCING THE SAME

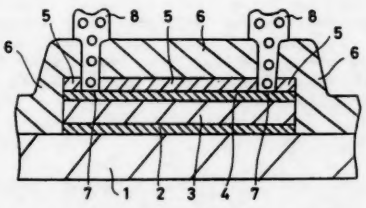
Hitoshi Kobayashi, Tochigi, Japan, assignor to Nippon Precision Circuits Ltd., Tokyo, Japan

Filed Jul. 17, 1990, Ser. No. 554,235

Claims priority, application Japan, Jul. 27, 1989, 1-195175

Int. Cl.[5] H01L *27/02*

U.S. Cl. 357—51 **1 Claim**

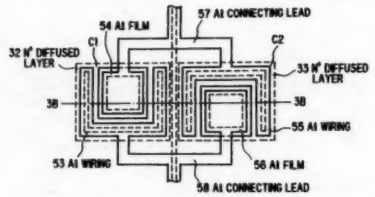


1. A semiconductor device comprising a thin film under silicon layer having silicon as a main component and formed on a substrate, a thin film resistor layer formed on said under silicon layer, a thin film upper silicon layer having silicon as a main component on said resistor layer and having a contact part on a surface thereof, a thin film silicon oxide layer on said upper silicon layer except on the upper part of said contact part of said upper silicon layer, a protective insulating layer on said silicon oxide layer except on said upper part of said contact part of said upper silicon layer, and a metal layer contacting said contact part of said upper silicon layer and laterally contacting said thin film oxide layer.

5,083,184
CAPACITANCE DEVICE

Kouhei Eguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 8, 1990, Ser. No. 564,250
Claims priority, application Japan, Aug. 8, 1989, 1-205951; Aug. 18, 1989, 1-212284
Int. Cl.[5] H01L *27/02, 29/34, 23/48, 29/44*
U.S. Cl. 357—51 **8 Claims**



1. A capacitance device, comprising:

a first capacitance element having first and second electrodes provided to sandwich a first dielectric film, said second electrode being positioned under said first dielectric film and connected to a first taking-out electrode, and said first electrode being positioned over said first dielectric film and surrounded along a major portion of its periphery by said first taking-out electrode; and

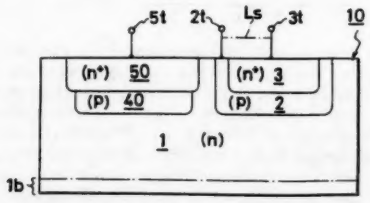
a second capacitance element having a third electrode of the same material as said first electrode and a fourth electrode of the same material as said second electrode to sandwich a second dielectric film of the same material as said first dielectric film, said fourth electrode being positioned under said second dielectric film and connected to a second taking-out electrode, and said third electrode being positioned over said second dielectric film and surround along a major portion of its periphery by said second taking-out electrode;

wherein said first taking-out electrode is connected to said third electrode, and said second taking-out electrode is connected to said first electrode.

5,083,185
SURGE ABSORPTION DEVICE

Yutaka Hayashi, Ibaraki; Masaaki Sato, Sagamihara; Yuji Muramatsu, Machida; Hirofumi Yoshihara, Hamuramachi, and Teiji Hasegawa, Kawasaki, all of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry; Sankosha Corporation and Mitaka Denshi Kagaku Laboratory Inc., all of Tokyo, Japan

Continuation of Ser. No. 829,516, Feb. 14, 1986, abandoned.
This application Feb. 26, 1990, Ser. No. 488,457
Claims priority, application Japan, Feb. 15, 1985, 60-26498; May 14, 1985, 60-100400; Sep. 17, 1985, 60-203447; Sep. 17, 1985, 60-203448; Dec. 27, 1985, 60-292969
Int. Cl.[5] H01L *29/74, 29/90, 29/48*
U.S. Cl. 357—38 **2 Claims**



1. A surge absorption device comprising:

a first semiconductor region having a first surface portion and exhibiting conductivity of one type;

a second semiconductor region formed in contact with said first surface portion of said first region and exhibiting conductivity of the type opposite to that of said first region to form a first pn junction between itself and said first region;

at least one third region formed in contact with said second region so as to determine the effective thickness of said second region which correspond to the distance between said first region and at least one third region;

at least one fourth semiconductor region formed in contact with said first region, spaced apart from said second region and forming a second pn junction between itself and said first region for causing minority carriers of a kind the same as that of minority carriers in said first region to be injected therethrough into said first region when a depletion layer formed by application of reverse bias across said first pn junction has reached said at least one third region to form a punch-through region in said second region;

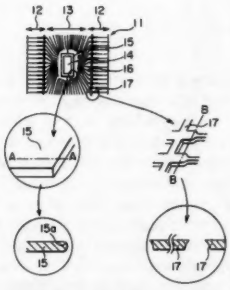
a fifth semiconductor region provided with a first ohmic electrode, formed in contact with said at least one fourth region to form a third pn junction between itself and said at least one fourth region, said fifth region also formed in contact with said first region; and

said at least one third region being also one capable of injection minority carriers of a kind the same as that of minority carriers in said second region into said second region after the formation of said punch-through region.

5,083,186
SEMICONDUCTOR DEVICE LEAD FRAME WITH ROUNDED EDGES

Kazuhisa Okada, and Akihiro Okamoto, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jun. 8, 1990, Ser. No. 535,070
Claims priority, application Japan, Apr. 12, 1990, 2-94952
Int. Cl.[5] H01L *23/48, 23/28, 29/34, 21/60*
U.S. Cl. 357—70 **2 Claims**



1. A leadframe for a semiconductor device comprising:

a die pad having opposed first and second faces on which a semiconductor device may be mounted and side surfaces extending between said first and second faces wherein said side surfaces have a substantially rounded configuration in a cross-section taken substantially perpendicular to the first face;

a plurality of inner leads, each inner lead having an end disposed adjacent said die pad; and

a plurality of outer leads, each outer lead being connected to a corresponding inner lead and having a trapezoidal cross-sectional configuration.

5,083,187

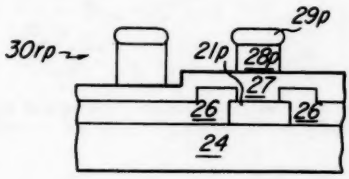
INTEGRATED CIRCUIT DEVICE HAVING BUMPED POWER SUPPLY BUSES OVER ACTIVE SURFACE AREAS AND METHOD OF MANUFACTURE THEREOF

Michael A. Lamson, Van Alstyne, and Darvin R. Edwards, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 523,959, May 16, 1990, abandoned. This application Apr. 16, 1991, Ser. No. 686,866

Int. Cl.[5] H01L *23/48*

U.S. Cl. 357—71 7 Claims



1. An integrated circuit device comprising:

a semiconductor chip having an active circuit formed in a face thereof;

a terminal in electrical contact with the active circuit for transferring power thereto;

a passivation oxidation layer overlying the terminal, having a via so that electrical connection can be made to the terminal through the via;

a patterned metal layer overlying the oxidation layer and the active circuit, and filling the via for transferring power to the terminal; and

a plurality of metal bumps connected to the patterned metal layer, for receiving power.

5,083,188

INTEGRATED CIRCUIT HAVING SUPERCONDUCTIVE WIRINGS

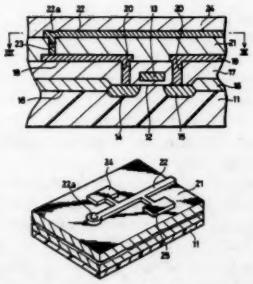
Tadato Yamagata, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 241,886, Sep. 8, 1988, abandoned. This application Nov. 27, 1990, Ser. No. 618,024

Claims priority, application Japan, Sep. 8, 1987, 62-224479

Int. Cl.[5] H01L *23/48, 29/46;* H01B *12/00;* H04B *1/00*

U.S. Cl. 357—71 8 Claims



1. An integrated circuit comprising:

a semiconductor substrate;

an integrated circuit device formed on said semiconductor substrate; and

a superconductive wiring connected to said integrated circuit device; wherein

said superconductive wiring comprises a contact portion formed of a superconductive material, and a portion for heat radiation, wherein said portion for heat radiation is separate from said contact portion.

5,083,189

RESIN-SEALED TYPE IC DEVICE

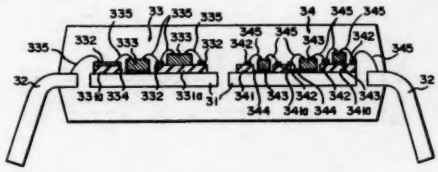
Hiromichi Sawaya, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 174,434, Mar. 28, 1988, abandoned. This application Apr. 9, 1990, Ser. No. 506,251

Claims priority, application Japan, Mar. 31, 1987, 62-76175; Mar. 31, 1987, 62-76176; Mar. 31, 1987, 62-78550

Int. Cl.[5] H01L *23/28, 23/16*

U.S. Cl. 357—72 6 Claims



1. A multi-hybrid integrated circuit device with a resin-sealed type package comprising:

a lead frame having a plurality of separated island portions and a plurality of electrical lead portions positioned around said plurality of island portions;

a plurality of hybrid units at least one of which is mounted on each of said plurality of island portions, each of said hybrid units having a circuit board, said circuit board including an insulating substrate and conductive interconnecting layers printed with a predetermined pattern formed thereon and a plurality of active or passive elements located over the circuit board and connected with corresponding interconnecting layers;

a plurality of fine wires electrically connected to said hybrid units and said lead portion of said lead frame; and

resin mold for sealing said plurality of island portions, inner portions of said lead portions, the hybrid units and the fine wires as an integral unit.

5,083,190

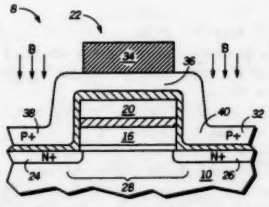
SHARED GATE CMOS TRANSISTOR

James R. Pfiester, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 402,291, Sep. 5, 1989, Pat. No. 4,997,785. This application Dec. 17, 1990, Ser. No. 628,821

Int. Cl.[5] H01L *27/02*

U.S. Cl. 357—42 7 Claims



1. A CMOS semiconductor device having opposed N and P type channel regions electrically controlled by a shared gate electrode intermediate to the channel regions, the shared gate electrode comprising:

a first conductive region having an N-type impurity adjoining the N channel region;

a second conductive region having a P-type impurity adjoining the P channel region, wherein said first and second conductive regions form a common conductive layer; and

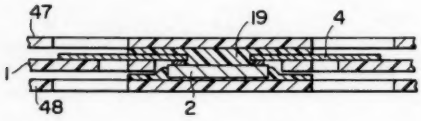
a conductive diffusion barrier selected from the group consisting of a refractory metal nitride and titanium carbide disposed within said common conductive layer separating said first and second conductive regions and preventing the diffusion of impurity atoms therethrough.

5,083,191

SEMICONDUCTOR DEVICE

Tetsuya Ueda, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Nov. 28, 1989, Ser. No. 442,708
Claims priority, application Japan, Aug. 15, 1989, 1-209578
Int. Cl.[5] H01L *23/48*
U.S. Cl. 357—68 **10 Claims**



1. A semiconductor device comprising:

an insulating film having an opening, opposed first and second surfaces, and a width;

a semiconductor chip positioned within the opening of said insulating film, said semiconductor chip having opposed first and second surfaces generally parallel to said first and second surfaces of said insulating film, respectively, and a plurality of electrodes disposed on said first surface of said semiconductor chip;

a plurality of leads supported on said first surface of said insulating film, each of said leads having a first end connected to a corresponding electrode of said semiconductor chip and a second end extending beyond said insulating film;

first and second protective films having respective widths substantially the same as the width of the insulating film, disposed on opposite sides of said semiconductor chip and on opposite sides of said insulating film facing said first and second surface of said insulating film, respectively; and

a bonding agent disposed between said first protective film and said first surface of said semiconductor chip, between said first protective film and said first surface of said insulating film, between said second protective film and said second surface of said semiconductor chip, and between said second protective film and said second surface of said insulating film, sealing said semiconductor chip and bonding said first and second protective films to said semiconductor chip and said insulating film.

5,083,192

CLUSTER MOUNT FOR HIGH INTENSITY LEDS

Josef Rzeznik, Conshohocken, and Raymond E. Foran, Philadelphia, both of Pa., assignors to Kulicke and Soffa Industries, Inc., Willow Grove, Pa.

Filed Apr. 30, 1990, Ser. No. 516,470
Int. Cl.[5] H01L *23/14, 23/04*
U.S. Cl. 357—74 **7 Claims**

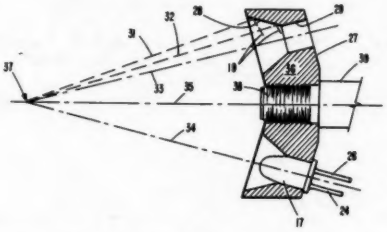
1. A light emitting diode cluster mount for concentrating light being emitted from super bright light emitting diode chips that are bonded to a base electrode and encapsulated in a transparent carrier, comprising:

a cluster mount having a plurality of diode receivers therein,

said cluster mount having a central axis and each of said diode receivers having a focus axis displaced from said central axis and focused to cross said central axis at predetermined distance from said cluster mount,

said diode receivers each comprising an adjustable sleeve portion and a tapered reflector portion,

means for positioning said light emitting diode chips at a position adjacent said tapered reflector portion so that the light emitting from the sides of each diode semiconductor is reflected and refocused along its focus axis, and



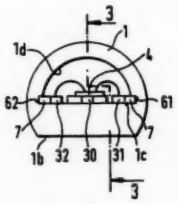
support means extending from the rear of said mount for attaching said cluster mount to a support structure.

5,083,193

SEMICONDUCTOR PACKAGE, METHOD OF MANUFACTURING THE SAME, APPARATUS FOR CARRYING OUT THE METHOD, AND ASSEMBLY FACILITY

Viktor Heitzler, Umkirch, and Richard Kapp, Glottertal, both of Fed. Rep. of Germany, assignors to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Filed Aug. 4, 1989, Ser. No. 389,718
Int. Cl.[5] H01L *23/28, 23/48, 29/44, 29/60*
U.S. Cl. 357—74 **7 Claims**



1. A semiconductor device comprising:

(a) a performed housing having an opening defining a hollow space therein and having grooves in the hollow space of the housing which run, respectively, from the opening of the housing along a sidewall, toward and along a bottom in a direction perpendicular to the bottom, and along another sidewall disposed essentially parallel to the first-mentioned sidewall;

(b) a plurality of leads extending from outside said housing to within said hollow space, one of said leads having a mounting surface at its inner end upon which a chip can be mounted; and

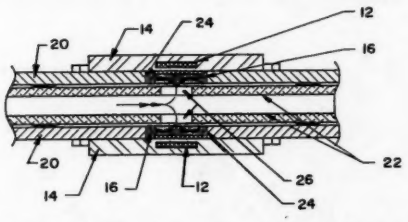
(c) a chip mounted on said mounting surface of said one leads, said chip having areas each connected with an inner end of at least one of the other of said plurality of leads, the inner ends of the leads being inserted through said opening and into said hollow space in said housing such that at least a portion of the outermost edges of said plurality of leads engage said grooves with a slight interference fit and that end portions of at least one inner end of said leads engage the groove at the bottom of said housing at least in part.

5,083,194

AIR JET IMPINGEMENT ON MINIATURE PIN-FIN HEAT SINKS FOR COOLING ELECTRONIC COMPONENTS

Bradley W. Bartilson, Chippewa Falls, Wis., assignor to Cray Research, Inc., Minneapolis, Minn.

Filed Jan. 16, 1990, Ser. No. 465,042
Int. Cl.[5] H01L *23/02, 25/04, 39/02*
U.S. Cl. 357—81 18 Claims



1. An apparatus for using a cooling air flow to dissipate heat from an electronic device mounted on a printed circuit board, comprising:

(a) a discrete air manifold mounted adjacent to the printed circuit board;

(b) inlet means on said manifold for accepting the cooling air flow into said manifold; and

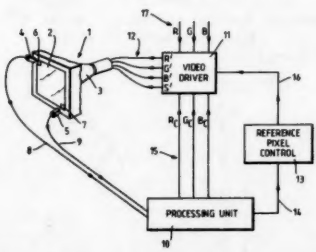
(c) nozzle means on said air manifold for expelling the cooling air flow from said air manifold as an air jet, said air jet impinging upon a face of the electronic device, thereby cooling the electronic device mounted on the printed circuit board.

5,083,195

COLOR DISPLAY CONTROL SYSTEM

Graham C. Evelin, Hemel Hempstead, England, assignor to Crosfield Electronics Limited, London, England

Filed Jun. 15, 1989, Ser. No. 366,705
Claims priority, application United Kingdom, Jun. 21, 1988, 8814157
Int. Cl.[5] H04N *9/64, 17/04, 5/58*
U.S. Cl. 358—10 10 Claims



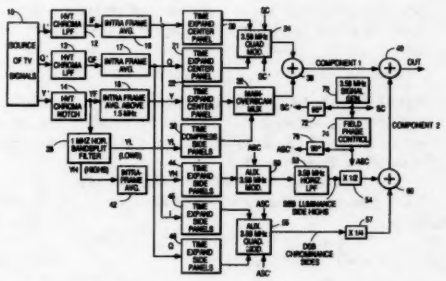
1. A color display control system for use with a display having a screen capable of being activated so as to generate at least two colors, the system comprising at least one optical sensor spaced from the screen for continuously detecting optical radiation emitted from said display screen corresponding to each of said colors generated by said screen, and control means responsive to an output signal from said sensor related to the intensity of the detected radiation to control the optical characteristics of said display in response to changes in ambient lighting conditions so that the detected so that the detected color is generated in a predetermined manner.

5,083,196

CHROMINANCE PROCESSING APPARATUS FOR A COMPATIBLE WIDESCREEN TELEVISION SYSTEM

Michael A. Isnardi, Plainsboro, and Terrence R. Smith, Westmont, both of N.J., assignors to General Electric Company, Princeton, N.J.

Division of Ser. No. 435,227, Nov. 6, 1989. This application May 9, 1990, Ser. No. 520,938
Int. Cl.[5] H04N *11/22*
U.S. Cl. 358—12 5 Claims



1. In a system for processing a widescreen television-type signal containing a main panel image component having luminance and chrominance information, and a side panel image component having luminance and chrominance information, apparatus comprising:

first means for processing said main panel image component;

second means for processing said side panel component; and

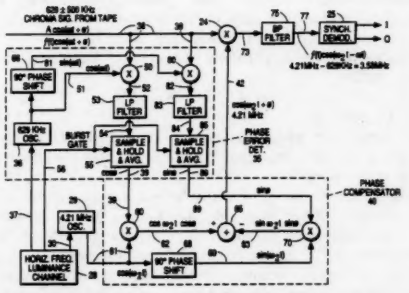
means included in said second means for selectively time compressing low frequency side panel luminance information other than said side panel chrominance information into an image overscan region normally not intended to be seen by a viewer so that said overscan region contains side panel luminance information exclusive of side panel chrominance information.

5,083,197

APPARATUS FOR RESTORING THE CORRECT PHASE RELATION OF THE CHROMA AND LUMINANCE SIGNALS PASSED THROUGH SEPARATE PATHS

Jung-Wan Ko, Suwon, Rep. of Korea, and Chandrakant B. Patel, Hopewell, N.J., assignors to SamSung Electronics Co., Ltd., Kyung Ki-Do, Rep. of Korea

Filed May 31, 1990, Ser. No. 531,144
Int. Cl.[5] H04N *9/89*
U.S. Cl. 358—19 14 Claims



1. In a system wherein two frequency-related signals A and B follow separate paths to an output point where signal A may be displaced in phase from reference signal B, means at the output point, comprising,

a first mixer to mix the phase-displaced signal A with a first

oscillation derived from reference signal B to produce a first phase error signal at the frequency of signal A,

a second mixer to mix the phase-displaced signal A with a 90° phase shifted version of said first oscillation to produce a second phase error signal,

a third mixer to mix said first phase error signal and a second oscillation at a frequency related to the frequency of reference signal B,

a fourth mixer to mix said second phase error signal and a 90° phase shifted version of said second oscillation, and

an adder receptive to the outputs of said third and fourth mixers to produce a phase compensation signal having a frequency related to the frequency of reference signal B and the phase displacement of signal A.

5,083,198

NONLINEAR RGB VIDEO SIGNAL PROCESSING

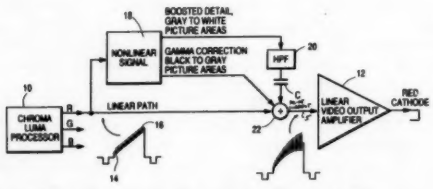
Peter E. Haferl, Adliswil, and Thomas H. Sauder, Volketswil, both of Switzerland, assignors to RCA Thomson Licensing Corporation, Princeton, N.J.

Filed Sep. 19, 1990, Ser. No. 583,881

Claims priority, application United Kingdom, Nov. 10, 1989, 8925438

Int. Cl.[5] H04N *5/202, 5/57, 9/69*

U.S. Cl. 358—32 **14 Claims**



1. Video signal processing apparatus comprising:

means for dividing a video signal into a first signal corresponding to relatively low amplitude levels of said video signal, and a second signal corresponding to relatively higher amplitude levels of said video signal,

means for high-pass frequency filtering the second signal, and

means for combining said video signal, said first signal and said high-pass frequency filtered second signal to produce a combined signal.

5,083,199

AUTOSTEREOSCOPIC VIEWING DEVICE FOR CREATING THREE-DIMENSIONAL PERCEPTION OF IMAGES

Reinhard Börner, Berlin, Fed. Rep. of Germany, assignor to Heinrich-Hertz-Institut for Nachrichtentechnik Berlin GmbH, Berlin, Fed. Rep. of Germany

Filed Jun. 18, 1990, Ser. No. 539,799

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1989, 3921061

Int. Cl.[5] H04N *13/04*

U.S. Cl. 358—88 **19 Claims**

1. Television apparatus for creating a three dimensional image of pictures from television images, said television apparatus comprising:

image screen means for displaying a plurality of visually distinct image segments containing three dimensional information on parallelly disposed elongated strips having substantially mutually parallel longitudinal axes;

lens means for being relatively positioned adjacent said image screen means, said lens means used for viewing said image segments therethrough;

said lens means defining an axis;

said axis of said lens means having a first end, a second end and a center;

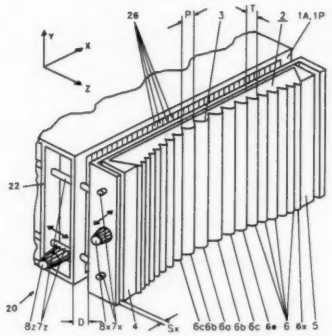
said lens means comprising a plurality of lens segments for being in registration with said image segments, each said lens segment defining at least one curved surface;

said lens segments each having a longitudinal axis that is generally perpendicular to said axis of said lens means and generally parallel to the longitudinal axes of said elongated strips;

said lens segments each being juxtaposed adjacent to at least one other said lens segment;

said lens segments each defining a maximum thickness;

said maximum thickness of each said lens segment being measured in a direction that is generally orthogonal to



both said axis of said lens means and said longitudinal axis of said lens segment; and

said maximum thickness of each consecutive lens segment from said center of said axis of said lens means of each said lens segment:

increasing in the direction from said center of said axis of said lens means to said first end of said axis of said lens means; and

increasing in the direction from said center of said axis of said lens means to said second end of said axis of said lens means.

5,083,200

METHOD FOR IDENTIFYING OBJECTS IN MOTION, IN PARTICULAR VEHICLES, AND SYSTEMS FOR ITS IMPLEMENTATION

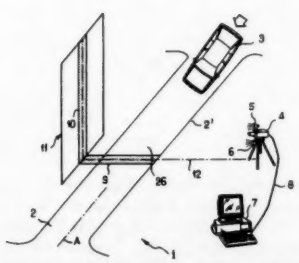
Thierry Deffontaines, Paris, France, assignor to Elsydel, Paris, France

Filed Apr. 2, 1990, Ser. No. 502,878

Claims priority, application France, Mar. 31, 1989, 89 04249

Int. Cl.[5] H04N *7/18, 7/00*

U.S. Cl. 358—105 **33 Claims**



1. Method for identifying an object (3) in motion, in particular a vehicle, said object moving inside a predetermined identification zone (2) following a predetermined movement axis (A), which method comprises the steps of:

acquiring periodically images (52) in a predetermined field of view (26), essentially vertical and of a width narrower than its height, said field of view (26) cutting the identifi-

cation zone (2) at a predetermined angle of intersection and defining an observation plane,

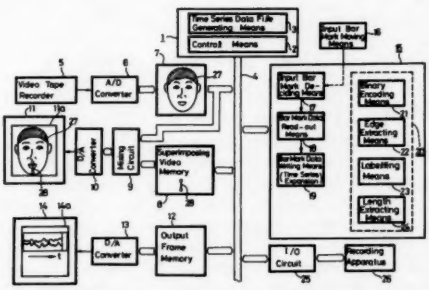
checking nature of image background in the field of view (26), to obtain background reference information in absence of the object (3) in the field of view (26), and

processing the images (52) acquired in combination with the background reference information, to extract therefrom a silhouette of the object (3) having crossed the field of view (26).

5,083,201
VIDEO IMAGE MOTION DATA GENERATOR FOR COMPUTER GRAPHICS

Akio Ohba, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 28, 1990, Ser. No. 500,393
Claims priority, application Japan, Mar. 31, 1989, 1-82739
Int. Cl.[5] H04N *7/18*
U.S. Cl. 358—105 **5 Claims**



1. A motion information generating apparatus for generating data indicative of motion of a predetermined portion of an image in a series of video picture frames formed of image data and displayed on a video monitor receiver, comprising:

designating means for designating a one-dimensional segment of each frame of said series of video picture frames successively displayed on said video monitor receiver, said one-dimensional segment extending across said predetermined portion of said image;

digital memory means for storing digital image data of said series of video picture frames;

means for reading out from said memory means digital image data corresponding to said predetermined portion for each frame of a consecutive series of video picture frames and said one-dimensional segment of said frame designated by said designating means; and

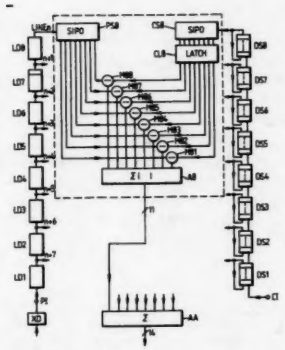
image processing means for processing said image data read out from said means for reading out and producing therefrom an information signal indicating motion of an edge in said predetermined portion of said image on the basis of image data in said series of video picture frames.

5,083,202
MOTION DETECTOR FOR VIDEO SIGNALS INCLUDING A NOVEL LINE COMPARISON PROCESSING SCHEME

Ian Parke, Ipswich, England, assignor to British Telecommunications public limited company, United Kingdom

PCT No. PCT/GB88/00781, § 371 Date Apr. 13, 1990, § 102(e) Date Apr. 13, 1990, PCT Pub. No. WO89/03152, PCT Pub. Date Apr. 6, 1989
PCT Filed Sep. 22, 1988, Ser. No. 469,494
Claims priority, application United Kingdom, Sep. 25, 1987, 8722612
Int. Cl.[5] H04N *7/12*
U.S. Cl. 358—105 **19 Claims**

1. A motion detector for video signals comprising: means (DS, CS, CL, LD, PS) for reception and temporary storage of signals representing one frame of a picture and of signals representing another frame of the picture; arithmetic means (M, A and AA of P1 and P3) for comparing each of a plurality of blocks (N) into which the saie one fram eis divided with the corresponding region of the other frame and with a plurality of positionally shifted regions of the other frame which represent a desired two-dimensional search extent (SI) and means responsive to the results of the comparisons to produce vector

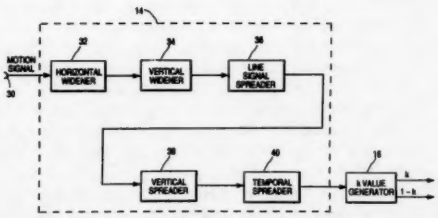


information (VOO, VOE) indicating the positional shift if any between the position of each said block and the position of the region of the other frame which meets a criterion of similarity between said blocks and regions, characterized in that the arithmetic means are arranged in operation to carry out all comparisons involving any line n of the said other frame before carrying out comparisons involving the n+p of said other frame, where p is the number of lines encompassed by a block.

5,083,203
CONTROL SIGNAL SPREADER

Jung-Wan Ko, Suwon, Rep. of Korea, and Hermann J. Weckenbrock, Bordentown, N.J., assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 31, 1990, Ser. No. 531,057
Int. Cl.[5] H04N *7/12*
U.S. Cl. 358—105 **6 Claims**



1. Apparatus for spreading control signals occurring along any one of a plurality of scanned lines comprising:

an input terminal to which control signals may be applied,

control signal widening means coupled to said input terminal having horizontal widening means for extending each control signal for an interval along the line in which it occurs so as to form an extended control signal and vertical widening means for repeating said line a given number of times,

line signal spreading means coupled to said widening means for generating during the first portion of the extended control signal on each line a ramp of increasing values, for maintaining the maximum value of the ramp during the

remainder of the extended control signal and for generating a ramp of decreasing values at the end of the extended control signal, and

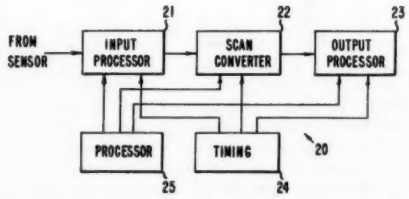
vertical spreading means coupled to said line signal spreading means for deriving a function of the corresponding signal values along a plurality of lines.

5,083,204

SIGNAL PROCESSOR FOR AN IMAGING SENSOR SYSTEM

James L. Heard, Torrance; Ted W. Berwin, Playa del Rey; Roland L. Andrews, Altadena, and Larry A. Scanlan, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Oct. 1, 1984, Ser. No. 656,382
Int. Cl.[5] H04N *5/33;* H01L *25/00*
U.S. Cl. 358—113 **11 Claims**



1. A signal processor for use with an imaging sensor system that comprises a plurality of detectors which are scanned across an image scene during a first portion of a scan cycle and scanned across a reference temperature source during a second portion of said scan cycle, said signal processor providing video output signals to a video monitor which are representative of said image scene, said signal processor comprising:

input processor means coupled to said imaging sensor system for processing analog signals derived from each of said plurality of detectors in order to equalize the gains of said analog signals relative to one another another during said first portion of said scan cycle based upon stored gain correction signals derived from a predetermined sensor responsivity calibration procedure, for processing said analog signals in order to restore the DC levels of signals derived from each of said detectors to DC values related to said reference temperature source during said second portion of said scan cycle, and for processing the equalized and DC restored signals to provide digitized first output signals from said input processor means, said input processor means including means for generating automatic responsivity equalization factors and DC restoration values including circuit means for correcting errors in said equalization factors resulting from adjustment of said restoration values and for correcting errors in said restoration values resulting from adjustment of said equalization factors;

scan converter means coupled to said input processor means for storing digitized first output signals and processing the stored digitized signals to provide digitized second output signals which are compatible with said video monitor; and

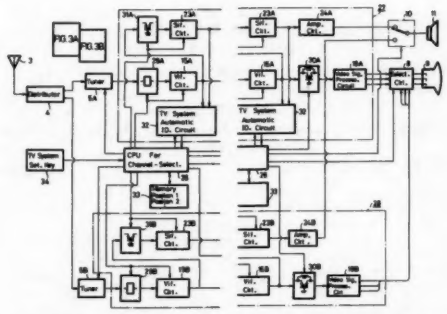
output processor means coupled to said scan converter means for processing said second digitized output signals in a manner which permits software-controlled digitized image enhancement thereof, and for converting the enhanced second digitized output signals into analog video signals compatible with said video monitor.

5,083,205

TELEVISION RECEIVER WITH MEMORY RECALL OF TELEVISION BROADCAST CHANNEL AND SYSTEM

Tsutomu Arai, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 9, 1990, Ser. No. 549,827
Claims priority, application Japan, Jul. 18, 1989, 1-185082
Int. Cl.[5] H04N *5/262, 5/62, 5/72*
U.S. Cl. 358—140 **20 Claims**



1. Television receiving apparatus for receiving television signals broadcasted over preselected broadcast channels by different television broadcast systems and including plural demodulator means for concurrently displaying television programs broadcasted by different television broadcast systems, said apparatus comprising: processor means for selecting a broadcast channel to be demodulated by at least one of said demodulator means; detecting means for detecting if television signals are broadcast over the selected broadcast channel and, if so, determining a sound carrier frequency derived from said television signals so as to identify, as a function of the determined sound carrier frequency, the television broadcast system associated with said selected broadcast channel and by which said television signals are broadcast; memory means for writing thereinto and reading out therefrom an indication of the selected broadcast channel and an identity of the television broadcast system associated therewith as determined by said detecting means; means for advancing said processor means to select another broadcast channel whereby an indication of said other broadcast channel and the identity of a television broadcast system associated therewith are written into said memory means, and retrieval means for reading out from said memory means selected broadcast channel indications together with the identities of the television broadcast systems associated therewith and that had been written thereinto; and means for controlling said plural demodulator means in response to the identified television broadcast systems read out from said memory means for concurrently displaying television programs broadcast over said read out broadcast channels.

5,083,206

HIGH DEFINITION TELEVISION ARRANGEMENT INCLUDING NOISE IMMUNITY MEANS

Scott C. Knauer, Mountainside; Arun N. Netravali, Westfield; Eric D. Petajan, and Peter H. Westerink, both of Millburn, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 19, 1990, Ser. No. 495,507
Int. Cl.[5] H04N *7/12, 7/00*
U.S. Cl. 358—141 **30 Claims**

1. A method for developing a video signal for transmitting frames of information representing an image, comprising the steps of:

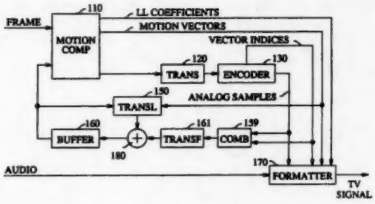
developing a first signal representing a frame of said image;

modifying said first signal to develop a second signal that is

a concatenated plurality of amplitude discrete samples approximating said first signal;

separating said second signal into intervals, where each interval comprises a given number of said samples;

for each interval, a) determining the largest sample amplitude found within the interval, b) based on said determining, developing a modification factor, c) modifying the amplitudes of all samples in the interval in accordance with said modification factor and forwarding the modified samples for transmission, and d) separately forwarding the modification factor for transmission.



5,083,207

IMAGE SENSING DEVICE HAVING DIRECT DRAINAGE OF UNWANTED CHARGES

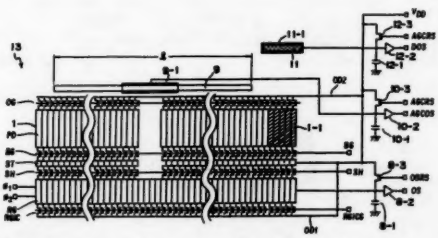
Tokuji Ishida; Toshio Norita, and Jun Hasegawa, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 298,998, Jan. 19, 1989, Pat. No. 4,985,774. This application Oct. 5, 1990, Ser. No. 593,863

Claims priority, application Japan, Jan. 20, 1988, 63-10245; Feb. 10, 1988, 63-31381; Feb. 10, 1988, 63-31382; Feb. 10, 1988, 63-31383; Feb. 10, 1988, 63-31384; Feb. 10, 1988, 63-31385; Feb. 10, 1988, 63-31386; Feb. 10, 1988, 63-31387; Feb. 10, 1988, 63-31388; Feb. 10, 1988, 63-31389; Feb. 10, 1988, 63-31390; Feb. 10, 1988, 63-31391; Feb. 10, 1988, 63-31392; Feb. 10, 1988, 63-31393

Int. Cl.[5] H04N *3/14*

U.S. Cl. 358—213.19 **8 Claims**



1. An image sensing system including a solid state image sensor, comprising:

means for outputting a mode signal indicating an operating mode of said solid state image sensor and a timing signal indicating an operating timing of said solid state image sensor;

means, provided in said solid state image sensor, for sensing an image formed thereon to produce image data representative of the sensed image;

means, provide in said solid state image sensor, for receiving said outputted mode signal and said outputted timing signal;

means, provide in said solid state image sensor, for selecting one operating mode among a plurality of operating modes in accordance with the mode signal received; and

means, provide in said solid state image sensor, for controlling said image sensing means in accordance with the selected operating mode and the timing signal received.

5,083,208

ELECTRONIC ZOOM APPARATUS

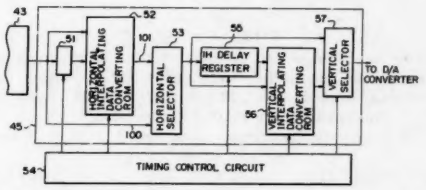
Noriaki Hatanaka, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 19, 1989, Ser. No. 452,602

Claims priority, application Japan, Dec. 26, 1988, 63-168923[U]; Feb. 22, 1989, 1-42142; Apr. 26, 1989, 1-49278[U]; Oct. 5, 1989, 1-260662

Int. Cl.[5] H04N *5/232, 3/223*

U.S. Cl. 358—227 **6 Claims**



1. An electronic zoom apparatus for use in an image pickup device, comprising:

image data selecting means for selecting image data to be zoomed from image data formed by an interlace scanning of said image pickup device and for outputting a first group of image data signals and a second group of image data signals, said selected image data including image data of a first field and image data of a second field, said first group of said image data signals representing said image data of said first field, and said second group of said image data signals representing said image data of said second field;

a first interpolation means electrically connected to said image data selecting means, for receiving said first group of said image data signals which include a first image datum signal representing a first image datum and a second image datum signal representing a second image datum adjacent to said first image datum, thereby reading out a first interpolated value between said first image datum and said second image datum, said first interpolated value being stored in advance in a first memory address indicated by said first image datum signal and said second image datum signal, for receiving said second group of said image data signals which include a third image datum signal representing a third image datum and a fourth image datum signal representing a fourth image datum adjacent to said third image datum, thereby reading out a second interpolated value between said third image datum and said fourth image datum, said second interpolated value being stored in advance in a second memory address indicated by said third image datum signal and said fourth image datum signal, and for outputting said first to fourth image data signals, a first interpolated datum signal representing said first interpolated value, and a second interpolated datum signal representing said second interpolated value; and

a second interpolation means electrically connected to said first interpolation means, for receiving said first image datum signal and said third image datum signal thereby reading out a third interpolated value between said first image datum and said third image datum, said third interpolated value being stored in advance in a third memory address indicated by said received first image datum signal and said received third image datum signal, for receiving said first interpolated datum signal and said second interpolated datum signal, thereby reading out a fourth interpolated value between said first interpolated value and said second interpolated value, said fourth interpolated

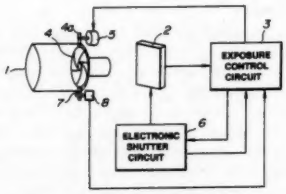
value being stored in advance in a fourth memory address indicated by said received first interpolated datum signal and said second interpolated datum signal, for receiving said second image datum signal and said fourth image datum signal, thereby reading out a fifth interpolated value between said second image datum and said fourth image datum, said fifth interpolated value being stored in advance in a fifth memory address indicated by said received second image datum signal and said received fourth image datum signal, and for outputting said first to fourth image data signals, said first and second interpolated data signals, and third to fifth interpolated data signals which respectively represent said third to fifth interpolated values.

5,083,209

VIDEO CAMERA

Tatsuo Inoue, Tokyo, and Tsutomu Niimura, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 330,639, Mar. 30, 1989, abandoned.
This application Oct. 31, 1990, Ser. No. 614,046
Claims priority, application Japan, Apr. 6, 1988, 63-83036
Int. Cl.[5] H04N *5/238*
U.S. Cl. 358—228 **6 Claims**



1. A video camera for producing video signals corresponding to sequential video frames on a continuous basis, comprising diaphragm means, an image sensing device and electronic shutter means incorporating a microcomputer, and means operatively connecting said image sensing device with said diaphragm means and said electronic shutter means, wherein

for adjusting the volume of the incident light on said image sensing device, said diaphragm means is actuated, with the shutter speed remaining constant, when the brightness of the object light is below a predetermined value; and the speed of said shutter means is changed, with the opening size of the diaphragm remaining constant, when the brightness of the object light is above said predetermined value, whereby deterioration of the image quality of said video signals for objects of relatively high brightness, due to hunting, is avoided.

5,083,210

ELIMINATION OF CONTOURING ON DISPLAYED GRAY LEVEL IMAGES

Paul E. Reilly, Rochester; Daniel Fleysher, Pittsford; Paul A. Rulli, Webster, and Jack T. Latone, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 28, 1990, Ser. No. 590,095
Int. Cl.[5] H04N *1/21, 1/40*
U.S. Cl. 358—298 **6 Claims**

1. A method for eliminating contours on a displayed image for an electronic reprographic system, the displayed image including an array of image signals composed of black and white binary pixels, the system having a memory for the storing the array, and a screen capable of displaying gray image signals, the gray image signals having G bits per gray level, comprising the steps of:

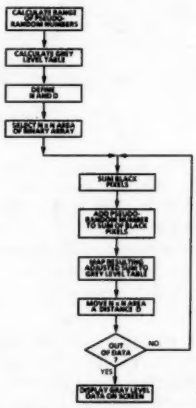
a) selecting a first current area of the array, the first current area including N×N binary pixels;

b) summing the black pixels in the currently selected area so that a sum of black pixels is obtained;

c) adding pseudo-random noise to the sum of black pixels to provide an adjusted sum of black pixels;

d) linearly mapping the adjusted sum of the currently selected area to provide a gray image signal;

e) selecting a subsequent current area, the subsequent current area being disposed a distance D from a previous currently selected area, wherein N>D;



f) repeating steps b through d until the subsequent current area is linearly mapped to the gray image signal;

g) repeating steps e and f for other N×N areas of the array until the array is converted to the gray image signals for displaying on the screen; and

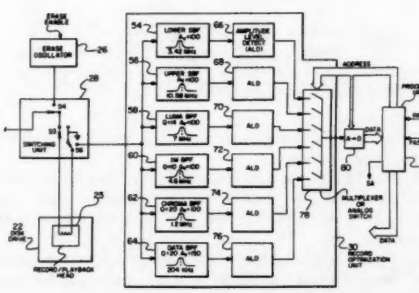
h) displaying the gray image signals on the screen.

5,083,211

METHOD AND APPARATUS FOR OPTIMIZING VIDEO RECORDING AND REPRODUCTION

Michael D. Dugan, Albion, and Jon L. Hoeft, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 23, 1989, Ser. No. 370,950
Int. Cl.[5] G11B *3/90;* **H04N** *5/78, 9/79*
U.S. Cl. 358—310 **13 Claims**



1. An apparatus for optimizing recording parameters of a disc drive recording unit, said apparatus comprising:

a. a video processing unit including means for receiving a video image signal, a test signal generator for generating a video test signal, processing circuitry for selectively processing said video input signal and said video test signal, and parameter adjustment means for adjusting various

parameters of said video image signal and said video test signal during processing by said processing circuitry;

b. a disc drive recording unit including recording means for receiving said video image signal and said video test signal from said processing circuitry and selectively recording said signals on a selected track of a recording disc, and reproduction means for reproducing said signals from said selected track; and

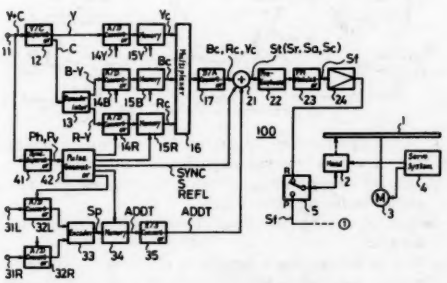
c. optimizing means, coupled to said reproduction means and said parameter adjustment means, for analyzing said video test signal reproduced forms aid selected track by said reproduction means and controlling said parameter adjustment means based on the analysis of said video test signal.

5,083,212

APPARATUS AND METHOD FOR RECORDING A COLOR TELEVISION SIGNAL ON AN OPTICAL DISC

Hideo Owa; Mikio Sugiki, both of Kanagawa; Hitoshi Okada, Chiba, and Hiroo Takahashi, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 180,340, Apr. 11, 1988, abandoned.
This application Aug. 2, 1990, Ser. No. 562,450
Claims priority, application Japan, Apr. 14, 1987, 62-091419
Int. Cl.[5] H04N *9/81*
U.S. Cl. 358—319 **3 Claims**



1. An apparatus for optically recording a color image signal and an audio signal on an optical disk, comprising;

means for time-base-compressing one horizontal period portion of an original luminance signal and one horizontal period portion of two original color difference signals of a standard television signal which includes a reference horizontal synchronizing pulse in a horizontal blanking period to generate a time-base-compressed video signal for one horizontal period;

means for digitizing an audio signal;

means for generating a time-base-compressed audio signal from the digitized audio signal;

timing means for dispersing said time-base-compressed audio signal in a vertical blanking period of said standard television signal;

means for generating a relatively narrow horizontal synchronizing pulse from said reference horizontal synchronizing pulse;

means for combining the dispersed time-base-compressed audio signal and said time-base-compressed video signal to generate a time-division-multiplexed signal in which said dispersed time-base-compressed audio signal and said time-base-compressed video signal are time-division multiplexed with each other;

means for inserting said time-base-compressed audio signal next to said relatively narrow horizontal synchronizing pulse in said horizontal blanking period of said time-division-multiplexed signal;

means for inserting a marker signal for indicating the start of a filed period in which said time-base-compressed audio signal has been dispersed in said vertical blanking period and recorded at every horizontal period;

means for frequency-modulating said time-division-multiplexed signal with a common carrier signal; and

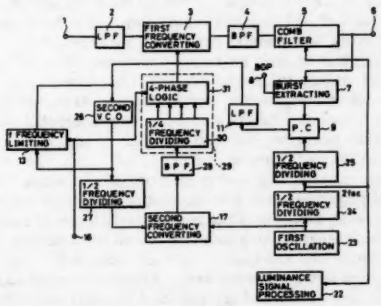
means for recording the frequency-modulated time-division-multiplexed signal on an optical disk.

5,083,213

CHROMINANCE SIGNAL PROCESSING CIRCUIT AND VIDEO TAPE RECORDER HAVING FUNCTION OF PROCESSING CHROMINANCE SIGNAL

Yuzou Yasuda, Gunma, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Sep. 18, 1989, Ser. No. 408,332
Claims priority, application Japan, Sep. 19, 1988, 63-234126
Int. Cl.[5] H04N *9/79, 9/45*
U.S. Cl. 358—326 **10 Claims**



1. A chrominance signal processing circuit for converting a frequency of a chrominance signal in a reproduced video signal into a high-frequency, comprising:

first frequency converting means for receiving said chrominance signal and converting a frequency of the received chrominance signal,

burst extracting means for extracting a burst signal from said reproduced video signal,

first oscillating means for generating an output signal of a first predetermined frequency,

phase comparator means for generating a signal representing a phase difference between said burst signal and said output signal of said first oscillating means,

second oscillating means, whose oscillation frequency is controlled corresponding to said phase difference, for supplying a signal of a second predetermined frequency,

second frequency converting means for receiving output signals of said first and second oscillating means and for generating a signal having a frequency of 4n ($f_{SC}\pm 40f_H$), wherein n is an integer, f_{SC} is a chrominance subcarrier frequency, and F_H is a horizontal frequency,

filter means for passing a signal having a frequency of 4n ($f_{SC}\pm 40f_H$) in the output signal of said second frequency converting means, and

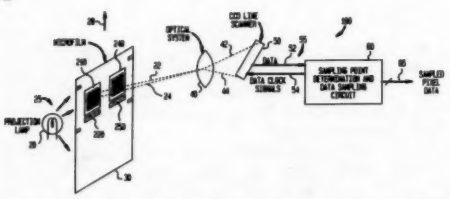
phase shifting means for dividing the frequency of a signal of 4n ($f_{SC}+40f_H$) outputted from said filter means by four and shifting the phase of the frequency-divided signal by 90° for each horizontal period, said phase shifting means having an output signal therefrom, said output signal of said phase shifting means being applied to said first frequency converting means, and said first frequency converting means converting a frequency of said chrominance signal by multiplying said chrominance signal by output signal of said phase shifting means.

5,083,214

APPARATUS AND METHODS FOR EXTRACTING DATA FROM A SCANNED BIT-MAPPED DATA STRIP

Daniel B. Knowles, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 2, 1990, Ser. No. 517,782
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—403 31 Claims



1. A method for determining pixel locations at which a scanned incoming bit-mapped array of pixel values is to be sampled in order to extract values of data bits stored in said array, each of said data bits being formed of at least one pixel in said array, said method comprising the steps of:

parsing said scanned bit-mapped array into successive strips each having successive rows of pixel values;

first determining, within each one of said strips, vertical line addresses as a function of inter-row differential intensity values occurring between each pair of successive ones of said rows of pixels in said one strip;

second determining, within each one of said strips, horizontal pixel addresses as a function of inter-pixel differential intensity values occurring between each pair of successive pixels situated along each one of said rows defined by said vertical line addresses in said one strip; and

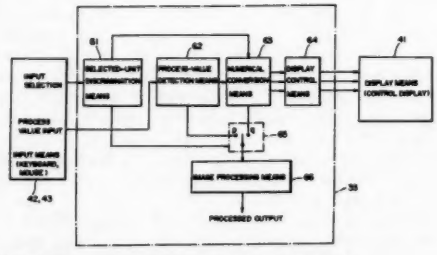
sampling said bit-mapped array at horizontal pixel addresses situated therein and lying on each of said rows defined by said vertical line addresses so as to yield sampled pixel data, whereby said sampled pixel data represents the data bit values stored in said bit-mapped array.

5,083,215

IMAGE DATA INPUTTING SYSTEM FOR IMAGE PROCESSING APPARATUS

Yasuhiro Hashimoto, Tokyo, and Kohei Sakura, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 3, 1990, Ser. No. 547,192
Claims priority, application Japan, Jul. 24, 1989, 1-188833
Int. Cl.[5] H04M *1/40*
U.S. Cl. 358—448 7 Claims



1. An image processing apparatus comprising:

means for receiving an input image signal;

means for inputting a value corresponding to a dimensional characteristic of an image to be printed and which is inputted in accordance with a selected dimensional system differing from a plurality of other dimensional systems;

means for detecting the selected dimensional system;

conversion means for converting the value inputted in said selected dimensional system to corresponding numerical values in said other dimensional systems;

processing means for converting the received input image signal to a desired image signal in accordance with at least one of said numerical values converted to a respective one of said other dimensional systems by said conversion means; and

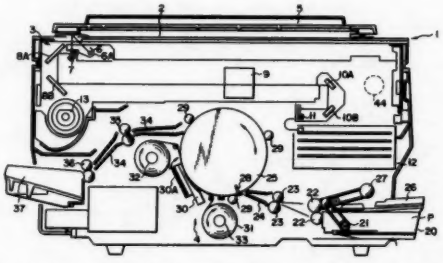
printing means for printing said desired image signal obtained from said processing means.

5,083,216

IMAGE FORMING APPARATUS FOR FORMING AN IMAGE ACCORDING TO MAGNIFICATION

Yasuo Abuyama, Ebina, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 22, 1989, Ser. No. 454,896
Claims priority, application Japan, Dec. 27, 1988, 63-329750; Nov. 29, 1989, 1-309979; Nov. 29, 1989, 1-309980
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—451 6 Claims



1. An image forming apparatus for forming an image in accordance with a copying magnification, comprising:

means for reading image data on a document in units of pixels, including density data;

means for setting the magnification of an image to be formed;

means for computing a density of pixels to be output from among those pixels which have been read by said reading means, in accordance with the magnification set by said magnification setting means, such that, when an enlargement magnification is set by the setting means, said computing means computes a density Zme of a pixel IME based on the equation:

$$Zme=(\times IMDB+A\times IMRA)+(A+B)$$

wherein IMDB and IMRA are adjacent pixels read by the reading means, IME is a pixel after enlargement with respect to the pixels IMDB and IMRA, A is a distance between a center of the pixel IME and a center of the pixel IMDB, and B is a distance between the center of the pixel IME and a center of the pixel IMRA, and when a reduction magnification is set by the setting means, said computing means computes a density Zmr of the pixel IME based on the equation:

$$Zmr=(A\times IMDB+B\times IMRA+C\times IMRB)\cdot +(A+B+C)$$

wherein IMDE, IMRA, and IMRB are adjacent pixels read by the reading means, IME is a pixel after reduction with respect to the pixels IMDB, IMRA, and IMRB, B is a distance from the center portion of the pixels IMDB, IMRA, and IMRB to a boundary between the pixel IMDS and the pixel IMRA, A is a distance between the boundary and the center of the pixel IMDB, and C is a distance from a boundary between the pixel IMRA and the adjacent pixel IMRB to the center of the pixel IMRB; and

means for forming an image by using the pixels computed by the computing means.

5,083,217

SHADOW-ADDED IMAGE FORMATION DEVICE

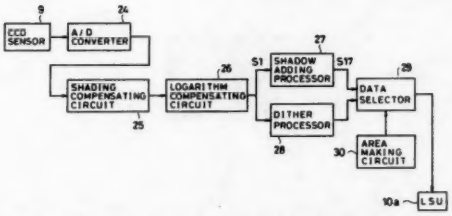
Hidechika Kumamoto, Sakai, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jun. 19, 1990, Ser. No. 540,213

Claims priority, application Japan, Jun. 28, 1989, 1-167359; Jun. 28, 1989, 1-167360

Int. Cl.[5] H04N *1/387*

U.S. Cl. 358—452 5 Claims



1. A shadow-added image formation device, comprising:

photoelectric converting means scanning an original image in horizontal and vertical directions for converting every pixel into an electric signal;

A/D-converting means for A/D-converting said electric signal into a digital signal;

signal converting means for converting said digital signal into a binary serial signal representing white and black pixels;

detecting means for detecting the width of an area to which shadow can be added from the black to white and white to black transitions of the binary serial signal;

shadow signal formation means for generating a shadow signal including a predetermined number of serial black and white pixel signals;

setting means for setting the width of a shadow area;

adding means for comparing the width of the areas detected by the detecting means and set by the setting means and adding the shadow signal, corresponding to the narrower area determined by said comparison, to the binary serial signal; and

reproducing means for reproducing an image from the binary serial signal to which the shadow signal has been added.

5,083,218

HAND-HELD IMAGE READING APPARATUS

Akihide Takasu, Fussa, and Atsushi Sagisaka, Hino, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Feb. 8, 1990, Ser. No. 477,232

Claims priority, application Japan, Feb. 8, 1989, 1-29287; Jul. 20, 1989, 1-188313

Int. Cl.[5] H04M *1/024*

U.S. Cl. 358—473 20 Claims

1. An image data processing apparatus, comprising:

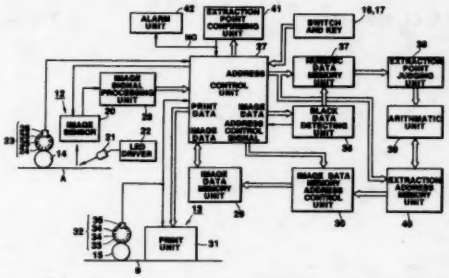
inputting means for inputting image data in response to a predetermined area of a material having image information thereon;

memory means for storing the image data inputted by said inputting means;

counting means for counting the number of a predetermined kind of data of the image data stored in said memory means;

determining means for determining a space between a set of image data existing in a middle portion of the image data stored in said memory means and another set of image data stored in said memory means based on a result obtained by said counting means;

extracting means for extracting said set of the image data existing in the middle portion of the image data with



respect to the space determined by said determining means; and

outputting means for outputting said set of image data extracted by said extraction means.

5,083,219

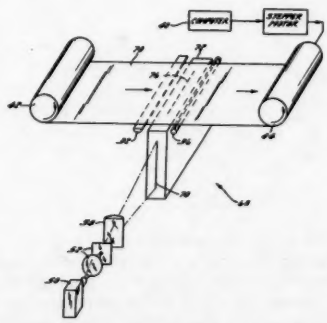
METHOD AND APPARATUS FOR RECORDING LIPPMAN HOLOGRAPHIC MIRRORS

Tomasz P. Jannson; Joanna L. Jannson, both of Torrance, and Christopher C. Rich, San Pedro, all of Calif., assignors to Physical Optics Corporation, Torrance, Calif.

Filed Dec. 26, 1989, Ser. No. 456,175

Int. Cl.[5] G03H *1/04*

U.S. Cl. 359—1 25 Claims



1. An apparatus for exposing coated holographic material to form a Lippman holographic mirror:

a source for a beam of laser light;

a lens upon which the beam of laser light is incident which expands the light beam in one direction to form a plane of light whose projection is a line;

a volume of an optically transparent medium upon which the expanded light beam is projected and through which the light propagates to an adjacent side of the volume, the holographic material being in contact with the adjacent side; and

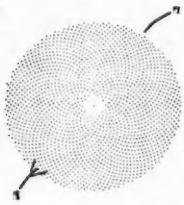
index-matching fluid dispensing means for optically coupling the holographic material and the adjacent side so that the light which propagates through the volume exposes the holographic material.

5,083,220

SCANNING DISKS FOR USE IN TANDEM SCANNING REFLECTED LIGHT MICROSCOPES AND OTHER OPTICAL SYSTEMS

James D. Hill, Mt. Airy, Md., assignor to Tandem Scanning Corporation, Reston, Va.

Filed Mar. 22, 1990, Ser. No. 497,318
Int. Cl.[5] G02B *5/30*
U.S. Cl. 359—234 32 Claims



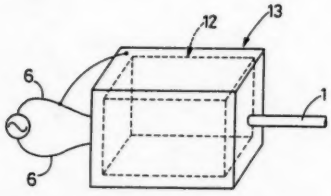
1. A scanning device for promoting high resolution and contrast of a viewed objective target, comprising a disk featuring a circular illumination area defined between radially inner and outermost pinholes including a multitude of pinholes, each pinhole located substantially equidistantly from its nearest neighboring holes in the illumination area.

5,083,221

OPTICAL UNIT HAVING MEANS FOR ELECTRICALLY SHIELDING ELECTROOPTICAL

Shuhei Toyoda, Nagoya; Soichiro Matsuzawa, Kuwana, and Masahiro Ichinose, Kasugai, all of Japan, assignors to NGK Insulators, Ltd., Aichi, Japan

Continuation of Ser. No. 172,379, Mar. 24, 1988, abandoned.
This application Nov. 9, 1989, Ser. No. 433,457
Claims priority, application Japan, Mar. 27, 1987, 62-75530
Int. Cl.[5] G02F *1/03, 1/07;* H01L *23/02*
U.S. Cl. 359—245 9 Claims



1. An optical unit comprising:

an electrooptical element which receives an incident light beam and has a pair of electrodes disposed on opposing faces thereof, and whose optical properties are changed as a function of a voltage applied between said pair of electrodes, whereby said incident light beam transmitted through said electrooptical element is influenced in response to said applied voltage;

a covering member for accommodating therein at least said electrooptical element, so as to permit said incident light beam to be incident upon said electrooptical element; and

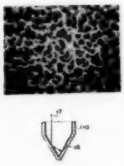
shielding means for electrically shielding at least said electrooptical element from an external electric field, said shielding means comprising an electrically conductive member formed separate from said covering member and said electrooptical element, said shielding means being disposed outside said covering member and accommodating therein said covering member and said electrooptical element, said shielding means being electrically connected to one of said pair of electrodes or grounded.

5,083,222

ULTRA-BLACK FILM AND METHOD OF MANUFACTURING THE SAME

Masao Horiuti; Shunichi Kodama, both of Tokyo, and Kenji Kuroda, Hadano, all of Japan, assignors to Anritsu Corporation, Tokyo, Japan

Division of Ser. No. 268,509, Nov. 8, 1988, Pat. No. 4,984,855.
This application Oct. 11, 1990, Ser. No. 595,593
Claims priority, application Japan, Nov. 10, 1987, 62-283878; Jan. 9, 1988, 63-2914; Feb. 27, 1988, 63-45569; Sep. 16, 1988, 63-231760; Sep. 16, 1988, 63-231761; Sep. 30, 1988, 63-127194[U]; Sep. 30, 1988, 63-127195[U]; Sep. 30, 1988, 63-244228
Int. Cl.[5] G02B *5/22*
U.S. Cl. 359—350 11 Claims



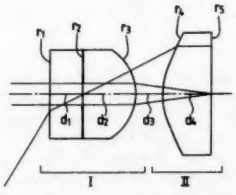
1. An optical receiver for an optical calorimeter having an inner surface provided with an ultra-black film comprising a base made of a material selected from the group consisting of electric conductors and non-conductors, a nickel-phosphorus alloy layer formed on said base and a phosphate layer formed on said nickel-phosphorus alloy layer, the spectral reflectance of said ultra-black film in a wavelength range of 380 to 1,800 nm being 0.04 to 0.4% and the surface of said ultra-black film having a plurality of conical holes with opening diameters of 1 to 6 μm and close to one another, the surfaces of said conical holes being fluffy.

5,083,223

OBJECTIVE LENS SYSTEM FOR ENDOSCOPES

Tsutomu Igarashi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1989, Ser. No. 458,548
Claims priority, application Japan, Dec. 28, 1988, 63-329191
Int. Cl.[5] G02B *13/18*
U.S. Cl. 359—708 30 Claims



1. An objective lens system for endoscopes comprising, in the recited order from an object side,

a first lens component,

a second lens component arranged on an image side of said first lens component with an airspace interposed and an aperture stop arranged on an object side of said airspace, both of the image side surface of said first lens component and the object side surface of said second lens component being designed as spherical surfaces having positive refractive powers, and said objective lens system being designed so as to satisfy the following conditions (1) and (2):

(1) $0.21 < L/f < 0.5$

(2) $0.9 < f_2/f_1 < 3$

wherein the reference symbol L represents an optical path length as measured from a front focal point of the objective lens system as a whole to the stop, the reference symbol f designates a focal length of the objective lens system as a whole, the reference symbol f_1 denotes a focal length of the first lens component and the reference symbol f_2 represents a focal length of the second lens component.

5,083,224

APPARATUS FOR RECORDING AN AUDIO SIGNAL WITH PROTECTION AGAINST RE-RECORDING THEREOF, AND RECORDING APPARATUS WHICH INDICATES THE PRESENCE OF SUCH PROTECTION

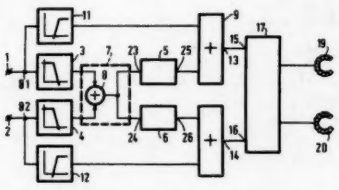
Abraham Hoogendoorn, and Gerardus Lokhoff, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 15, 1990, Ser. No. 495,017

Claims priority, application Netherlands, Apr. 14, 1989, 8900934

Int. Cl.[5] G11B *5/09*

U.S. Cl. 360—60 **23 Claims**



1. Apparatus for recording on a record carrier an audio signal comprising a left-hand and a right-hand channel, which apparatus has a first and a second input terminal for receiving the left-hand and the right-hand channel respectively, said first and said second input terminal being coupled respectively to a first and a second input respectively of the recording unit to record the signals applied to its inputs on the record carrier; characterized in that:

the first and the second input terminal are coupled to an input of a first and a second filter respectively, which filters are adapted to extract a first and a second low-frequency signal component from the left-hand and the right-hand channel respectively and to apply the first and the second low-frequency signal component to an output;

the output of the first filter is coupled to an input of a first signal-processing unit and the output of the second filter is coupled to an input of the second signal-processing unit;

the outputs of the first and the second signal-processing unit are coupled to the first input and the second input respetively of the recording unit;

the first signal-processing unit is adapted to add a first auxiliary signal to the signal applied to its input and to supply the signal thus processed to its output, and the second signal-processing unit is adapted to add a second auxiliary signal to the signal applied to its input and to supply the signal thus processed to its output; and

the first and second auxiliary signals being such that during reproduction of the audio signal, including the first and the second auxiliary signal added thereto, via two loudspeaker units arranged in a stereo configuration, the auxiliary signals are substantially inaudible to a listener.

5,083,225

DIGITAL SIGNAL RECORDING AND PLAYBACK APPARATUS

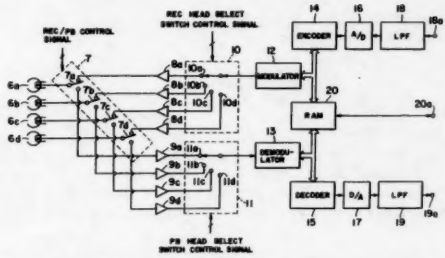
Kazuhiko Morisaki, and Yasuo Inoue, both of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 15, 1989, Ser. No. 310,530

Claims priority, application Japan, Feb. 16, 1988, 63-33640

Int. Cl.[5] G11B *15/14, 5/86, 21/04*

U.S. Cl. 360—64 **5 Claims**



1. In a digital signal recording and playback apparatus having a rotary drum, magnetic heads on said drum for recording onto a magnetic tape wound around an outer periphery of said drum at a lead angle and/or reproducing a digital signal, said magnetic tape being transported at a running speed so that said digital signal is recorded along an oblique track as a head scanning locus on the magnetic tape conforming to a standard track angle and a standard track length defined in an Industry Standard established for existing digital signal recording and playback apparatuses designed for the magnetic tape, the improvement wherein:

four of said magnetic heads are mounted on an outer periphery of said rotary drum at equiangular distances of substantially 90 degrees;

said magnetic tape is wound around said rotary drum through an angular range of substantially 90 degrees;

said rotary drum has a diameter of 30.077 millimeters;

said rotary drum according to said Industry Standard has a standard diameter of 30 mm;

said lead angle is 6°21′0.82″; and

said lead angle according to said Industry Standard is 6°22′;

so that when said running speed of said magnetic tape has a value N times a standard running speed of said Industry Standard where $(N>1)$, and the rotational speed of said rotary drum is $(\frac{1}{4})\times N$ times a standard rotational speed of said rotary drum, said diameter of said rotary drum is larger than said standard diameter of said rotary drum, and said lead angle is smaller than said standard lead angle, relative speed between said magnetic heads and said magnetic tape becomes equal to a value $(\frac{1}{4})\times N$ times that of said existing digital signal recording and playback apparatus and recording of a digital signal onto said magnetic tape is performed on said oblique track formed in conformity with said standard track angle and said standard track length.

5,083,226

MAGNETIC DISK DRIVE

Kazuo Shiiki, Kanagawa; Yoshihiro Shiroishi, Hachioji; Norio Ohta, Iruma; Toshiaki Tsuyoshi, Kawasaki; Hisashi Takano, and Fumio Kugiya, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 21, 1989, Ser. No. 410,495

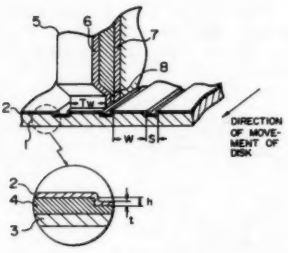
Claims priority, application Japan, Sep. 22, 1988, 63-236405

Int. Cl.[5] G11B *5/596*

U.S. Cl. 360—77.05 **19 Claims**

1. A magnetic-disk drive comprising: a magnetic disk having a ridge pattern consisting of a plurality of ridges extending in

a circumferential direction, at least two adjacent ridges being separated by a distance S, at least one ridge having a width W; a recording/reproduction head arranged over a surface of said disk and having a track with Tw larger than the width W of



said ridge and smaller than a pitch of said pattern, said pitch being defined as W+S; wherein said at least one ridge has a height of at least 500 Å, and wherein a distance between said recording/reproduction head and said magnetic disk is 0.1 μm or more.

5,083,227

ARRANGEMENT FOR REPRODUCING AN ELECTRIC SIGNAL

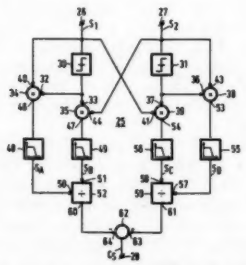
Josephus A. H. M. Kahlman, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 23, 1990, Ser. No. 468,517

Claims priority, application Netherlands, Feb. 13, 1989, 8900340

Int. Cl.[5] G11B *5/584, 5/592*

U.S. Cl. 360—77.13 **4 Claims**



1. An arrangement for reproducing an electric signal, in particular a digital electric signal, from a track on a record carrier, comprising a read device for reading the electric signal from the track, which read device comprises at least one pair of read units and has a first and a second output for supplying a first and a second signal component read from a first and a second track respectively on the record carrier by the read units of a pair,

a generator device, having a first and a second input coupled to the first and second output respectively of the read device, and having an output, which generator device is constructed to derive a control; signal from the first and the second signal component applied to its first input and its second input respectively, and to apply the control signal to it output,

positioning means for adjusting the relative position of a pair of read units in a direction transverse to the tracks under the influence of the control signal, said means having an input coupled to the output of the generator device, a pair of read units being mechanically coupled to one another,

characterized in that the first and the second input of the generator device are coupled to an input of a first and of a second level detector respectively, in that an output of the first level detector is coupled to first inputs of a first and a second multiplier unit, in that an output of the second level detector is coupled to first inputs of a third and fourth multiplier unit, in that the first input of the generator device is coupled to second inputs of the first and the fourth multiplier unit, in that the second input of the generator device is coupled to second inputs of the second and the third multiplier unit, in that an output of the first and the second multiplier unit is coupled to a first and a second input respectively of a first signal-combination unit, an output of the third and the fourth multiplier unit is coupled to a first and a second input respectively of a second signal-combination unit, in that an output of the first and the second signal-combination unit is coupled to a first and a second input respectively of a third signal-combination unit, which unit has an output coupled to the output of the generator device.

5,083,228

TRACKING ERROR DETECTING CIRCUIT

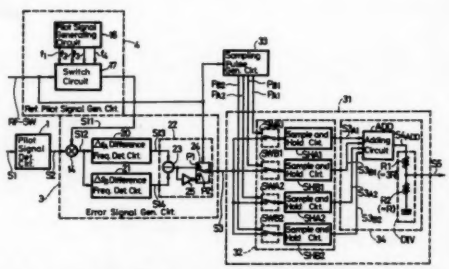
Kazuhiro Uchida, Kanagawa, and Kikuo Yamamoto, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 21, 1989, Ser. No. 396,320

Claims priority, application Japan, Aug. 29, 1988, 63-215852

Int. Cl.[5] G11B *5/584*

U.S. Cl. 360—77.14 **7 Claims**



5. A method of producing a tracking control signal for controlling the scanning by transducer means of successive tracks recorded on a record medium in which information and control signals are recorded, said method comprising the steps of recovering the control signals from the tracks scanned by said transducer means; deriving error indicating signals from the recovered control signals indicative of tracking errors of respective scans of said transducer means; sampling the error indicating signals once during each scan of a track when said transducer means scan a portion of said track approximately centrally located along a scanning direction thereof to produce one scanning error sample for each track; and averaging plural scanning error samples produced for plural scans to produce said tracking control signal.

5,083,229

DISK DRIVE WITH MINIMIZED HEAD-ARM EXCURSIONS

Alexander H. Frey, Jr., Pasadena, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 16, 1990, Ser. No. 509,860

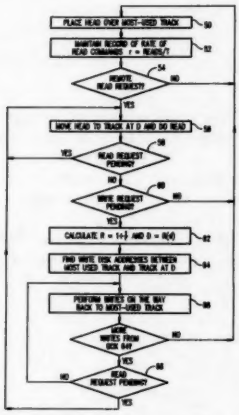
Int. Cl.[5] G11B *21/08, 5/55*

U.S. Cl. 360—78.04 **9 Claims**

1. In a disk drive means with at least a rotatable disk and a head-arm mechanism movable thereover, said disk having a plurality of concentric tracks including innermost and outermost tracks and an intermediate track positioned therebetween, said intermediate track including often-used records, a method for reducing movements of said head-arm mechanism comprising the steps of:

a. positioning said head-arm mechanism over said intermediate track;

b. moving said head-arm mechanism away from said intermediate track to another track to perform a requested read operation; and



c. moving said head-arm mechanism back to said intermediate track and performing write actions in tracks over which said head moves in its movement back to said intermediate track.

5,083,230

ACCESS MECHANISM FOR MAGNETIC DISK APPARATUS

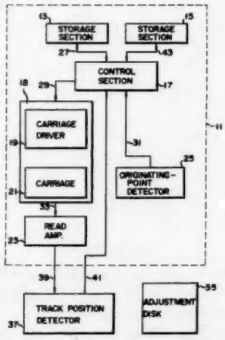
Syoji Nishioka, Fujinomiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 8,169, Jan. 29, 1987, abandoned. This application Oct. 25, 1990, Ser. No. 602,934

Claims priority, application Japan, Jan. 31, 1986, 61-18143

Int. Cl.[5] G11B *5/55, 21/08*

U.S. Cl. 360—78.04 **5 Claims**



1. A method of controlling a head in a disk recording/reproducing apparatus, comprising the steps of:

obtaining a first controlled variable supplied to a motor to move the head to a reference position;

obtaining a second controlled variable supplied to the motor to move the head to an Nth track of an externally supplied adjustment disk wherein track positioning data is stored to be used for positioning the head;

preliminarily storing the first and second controlled variables or the subtraction result of the first and second controlled variables in a memory;

supplying to said motor a third controlled variable obtained based on the subtraction result of the first and second controlled variables, whereby said motor moves said head to a specified track on the disk.

5,083,231

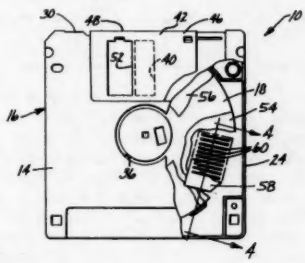
RIBBED CLEANING APPARATUS FOR DISK CARTRIDGES

Kevin C. Veenstra, St. Paul, and Jon R. Clark, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 13, 1990, Ser. No. 565,693

Int. Cl.[5] G11B *23/03*

U.S. Cl. 360—133 **9 Claims**



1. A disk cartridge comprising:

a cartridge case for housing a rotatable disk having a data recording area, the cartridge case comprising upper and lower shells mating to form the outer dimensions of the cartridge case, one shell having a drive shaft opening which receives a drive shaft to rotate the disk within the cartridge case, and at least one shell having a head access opening for accessing the disk;

two wipers for removing debris from the surface of the disk, wherein the wipers are made of cleaning material, and each wiper has a surface area covering the entire recording surface area of one side of the disk, and being disposed between one side of the disk and the respective upper and lower shells;

biasing means mounted on one shell for biasing the wipers into contact with the disk; and

a series of substantially parallel ribs mounted on the outer shell opposite the biasing means, wherein the ribs are oriented in a direction generally parallel to the radius of the disk and extend for substantially the entire radius of the disk to locate the ends of the ribs outside of the data recording area and to maintain constant contact between each wiper and the respective surface of the disk along substantially the entire radius of the disk.

5,083,232

FAULT CURRENT LIMITER

Nils-Johan Bergsjö; Birger Drugge; Lars Liljestrand, and Emile Schreurs, all of Västerås, Sweden, assignors to Asea Brown Boveri AB, Vasteras, Sweden

Continuation of Ser. No. 428,930, Oct. 30, 1989, abandoned. This application Feb. 4, 1991, Ser. No. 649,179

Claims priority, application Sweden, Oct. 31, 1988, 8803918

Int. Cl.[5] H02H *7/00;* **H01H** *9/42*

U.S. Cl. 361—11 **2 Claims**

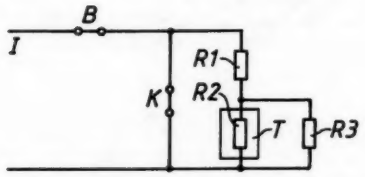
1. A fault current limiter for limiting current in electrical apparatus, comprising:

a contact device for normally carrying current to be limited to a permissible value and having at least one pair of contacts adapted to be opened for discontinuing current

through said contact device upon the sensing of a current exceeding said permissible value;

a first resistance having a terminal connected to one contact of said pair of contacts;

a second resistance having superconducting properties and serially connected with said first resistance, said second resistance being in a superconducting state with the current through said contacting device being lower than said permissible value and changing from said superconducting state to a normal conducting state when the current through said contact device exceeds said permissible value;



a third resistance being connected at least in parallel with said second resistance, said third resistance having a resistance lower than the resistance of the second resistance during the normal conducting state thereof, thereby enabling the current to be carried by said first and/or third resistance and affording negligible current flow with said second resistance in said superconducting state; and

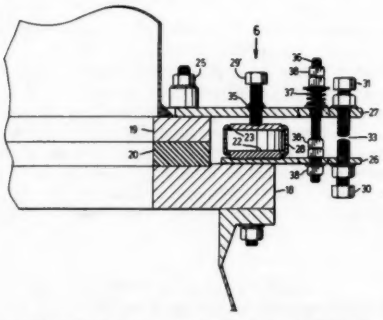
said first resistance being much less than said third resistance such that the current from said current limiting device flows through said first and second resistances and the free terminals of said second and third resistances being connected to the other of contact of said pair of contacts.

5,083,233

SURGE PROTECTION ASSEMBLY FOR INSULATING FLANGES

Peter Kirkby, 88 Royal Avon Crescent, Islington, Ontario, Canada M9A 2G1

Filed May 1, 1990, Ser. No. 517,021
Int. Cl.[5] H02H *9/06*
U.S. Cl. 361—117 **11 Claims**



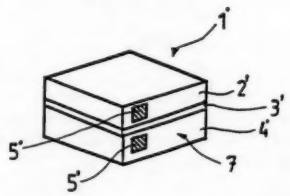
1. In combination with an insulating flange of a high voltage power transmission cable system wherein the insulating flange of a grounded metallic enclosure is sandwiched between a pair of independently grounded metal flanges, a surge protection device comprising at least one pair of metal stub plates rigidly attached to the metal flanges and extending radially therefrom in opposed relation to one another, a metal oxide varistor clamped between the stub plates in shunt with the insulating flange, the varistor having a breakdown voltage lower than the breakdown voltage of the insulating flange, and means defining an adjustable spark gap in shunt with the varistor assembly, the spark gap being adjusted to have a breakdown voltage higher than the varistor breakdown voltage but lower than the breakdown voltage of the insulating flange thereby to protect the insulating flange from transient surges should the varistor fail and to protect the varistor from excessive voltages.

5,083,234

MULTILAYER TRANSDUCER WITH BONDED CONTACTS AND METHOD FOR IMPLEMENTATION OF BONDING

Ari Lehto, Helsinki; Juha Lahdenperä, Vantaa, and Heikki Kuisma, Helsinki, all of Finland, assignors to Vaisala Oy, Helsinki, Finland

Filed Jul. 18, 1990, Ser. No. 553,597
Claims priority, application Finland, Aug. 17, 1989, 893874
Int. Cl.[5] H01G *7/00*
U.S. Cl. 361—283 **15 Claims**



1. A transducer formed from generally planar alternating conductive and insulating layers deposited onto a wafer, the wafer being generally planar and being separated in a direction generally perpendicular to the plane in a matrix pattern to form a plurality of individual transducer elements, each transducer element having alternating conductive and insulating layers corresponding to the wafer and having vertical surfaces generally perpendicular to the conductive and insulating layers, the conductive layers of each transducer element extending between the vertical surfaces thereof, and each transducer element having electrical conducts applied to the conductive layers, each of the electrical contacts being placed on one of the vertical surfaces of the transducer elements and laying within edges of the conductive layer to which the electrical contact is applied, the electrical contacts being placed on the conductive layers by a placing process.

5,083,235

METHOD OF MAKING CAPACITORS CONTAINING STANNIC TEREPHTHALATE

Richard F. Gorssman, Shelton, Conn., and David M. Tanno, Richmond Heights, Ohio, assignors to Synthetic Products Company, Cleveland, Ohio

Continuation of Ser. No. 357,612, May 24, 1989, Pat. No. 4,963,127, which is a continuation of Ser. No. 226,318, Jul. 27, 1988, abandoned. This application Oct. 15, 1990, Ser. No. 597,959
Int. Cl.[5] H01L *23/00*
U.S. Cl. 361—311 **2 Claims**

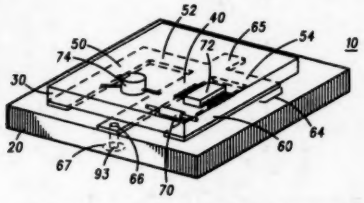
1. In a method of making a capacitor, the improvement comprising incorporating stannic terephthalate as a dielectric material.

5,083,236

INDUCTOR STRUCTURE WITH INTEGRAL COMPONENTS

Marc K. Chason, Schaumburg; Robert A. Kellen, Arlington Heights, both of Ill.; Leng H. Ooi, Sunrise, and George Revtai, Plantation, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 28, 1990, Ser. No. 589,954
Int. Cl.[5] H05K *1/18*
U.S. Cl. 361—401 59 Claims



1. An inductor, occupying a volume, having electronic components mounted within the volume occupied by the inductor structure, said inductor structure comprised of:

a first dielectric substrate layer having at least first and second sides and having an electrically conductive material strip on said first side having a predetermined length and first and second ends;

a second dielectric substrate layer, having first and second sides coupled to said first side of said first dielectric substrate layer substantially covering the electrically conductive material strip, the first and second coupled dielectric substrate layers forming a substantially solid volume;

a conductive outer layer, coupled to and substantially surrounding the substantially solid volume, and being electrically coupled to the first end of the conductive strip;

at least one electrical component enclosed within said solid volume;

means for coupling electrical signals between the exterior of the solid volume and the at least one electrical component;

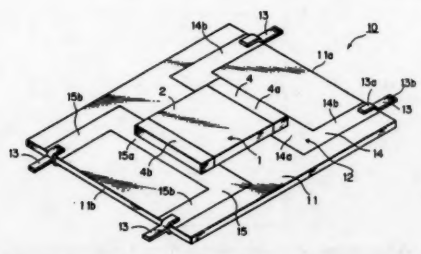
such that an inductance exists at said second end of conductive strip, said first end of said strip being shorted to said conductive outer layer.

5,083,237

ELECTRONIC PARTS AND ELECTRONIC DEVICE INCORPORATING THE SAME

Tetsuroûô Tsuji, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 4, 1990, Ser. No. 576,789
Claims priority, application Japan, Nov. 14, 1989, 1-296825
Int. Cl.[5] H05K *1/16*
U.S. Cl. 361—402 6 Claims



1. An electronics parts incorporating a multilayer capacitor which has a plurality of internal electrodes laminated through a dielectric in an inner part of said capacitor and first and second terminal electrodes provided on both ends of said capacitor, respectively, and electrically connected with said internal electrodes, respectively, said electronic parts comprising:

a board;

first and second conductive patterns which are provided on two areas of a surface of said board with said first and second terminal electrodes connected with said first and second conductive patterns, respectively, and which are connected with said terminal electrodes at said multilayer capacitor;

wherein each of said first and second conductive patterns is in a U-shaped pattern consisting of a central part and two side parts, with the tip ends of each of said side parts of said first conductive pattern being allocated at one side of the opposed sides of said board while the tip ends of each of said side parts of said second conductive pattern are allocated at the other side of said opposite side of said board, with said first and second terminal electrodes being connected with said central parts of said first and second conductive patterns, respectively; and

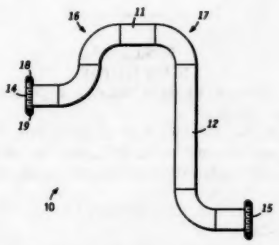
external leads which are connected with said tip ends of both side parts and said first and second conductive patterns respectfully.

5,083,238

HIGH FREQUENCY ELECTRONIC ASSEMBLY

Thomas W. Bousman, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 4, 1991, Ser. No. 650,327
Int. Cl.[5] H01B *7/08;* H01R *23/68*
U.S. Cl. 361—413 8 Claims



1. An electronic assembly comprising:

a plurality of circuit boards, each containing connector means; and

a plurality of multi-conductor, flexible, thin cables, each of said cables comprising means for coupling to said connector means, and the structure of each of said cables being such that, if positioned in a single plane, it has a plurality of substantially rigid turns, the sum of the degrees of arc of such turns in one direction being equal to the sum of the degrees of arc of such turns in the opposite direction, such that said conductors have equal lengths throughout the cable, wherein one of said circuit boards is connected to each of said other circuit boards through their respective connector means and an associated one of said plurality of cables.

5. A multi-conductor, flexible, thin cable, the structure of said cable being such that, if positioned in a single plane, it has an equal number of substantially rigid left-hand and right-hand turns, such that said conductors have equal lengths throughout the cable, and said cable comprising a plurality of pairs of conductors, each conductor pair being separated by a ground conductor, and the outer, planar surfaces of the cable comprising ground layers.

5,083,239

SHIELDING APPARATUS FOR AN ELECTRICAL ASSEMBLY

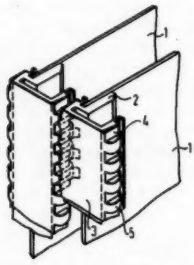
Peter Sedlemeier; Ingeborg Busse, and Eduard Mair, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 23, 1990, Ser. No. 527,429

Claims priority, application European Pat. Off., Jun. 9, 1989, 89110472.1

Int. Cl.[5] H05K *9/00*

U.S. Cl. 361—424 21 Claims



1. Shielding apparatus in an electrical assembly insertable into a module magazine, a strip-shaped contact plate being secured to a front cover of said electrical assembly, the contact plate extending in a longitudinal direction of the front cover and having at least a plurality of resilient contact tabs positioned toward neighboring front covers, these contact tabs being contacted by the shielding apparatus of the neighboring assemblies, comprising the contact plate being a shroud covering the entire front cover and being directly contacted by two shrouds of two neighboring assemblies, respectively.

5,083,240

LIGHT GUIDE

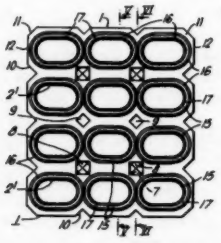
Ian K. Pasco, Slough, England, assignor to Technophone Limited, Surrey, England

Division of Ser. No. 568,256, Aug. 15, 1990, Pat. No. 5,053,928. This application May 1, 1991, Ser. No. 694,466

Claims priority, application United Kingdom, Aug. 24, 1989, 8919214.0

Int. Cl.[5] G01D *11/28*

U.S. Cl. 362—26 4 Claims



1. A light guide for illuminating an information-bearing member, comprising a transparent plate having

at least one aperture associated with the information-bearing member,

means for reflecting light from an external light source into a plane of the plate, and

means for directing the light to provide an illuminated ring around a periphery of said at least one aperture, said means for directing comprises an integral protrusion around said periphery of said at least one aperture.

5,083,241

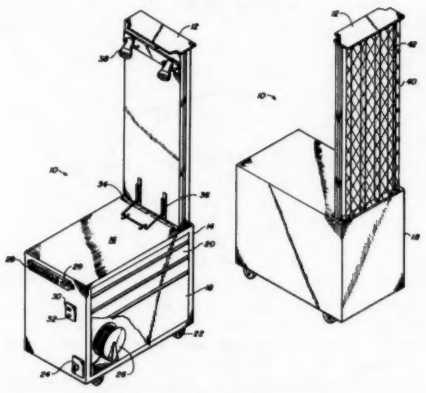
PORTABLE LIGHT/TABLE

Allen L. Foster, 2351 Valley West Dr., Santa Rosa, Calif. 95401

Filed Jul. 26, 1991, Ser. No. 736,493

Int. Cl.[5] F21V *33/00*

U.S. Cl. 362—33 4 Claims



1. A portable light and table of this comprising:

a work/storage table having a table surface and storage area;

a light panel portion having a first side and a second side, said first side bearing at least one work table light element, and said second side bearing at least one work area light element;

a hinge member adjustably supporting said light panel portion on said table surface;

an electrical extension cord connected to said work table light element and said work area light element; and

switch means for selectively activating said work table light element and said work area light element.

5,083,242

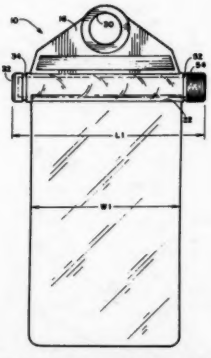
ILLUMINATED UNDERWATER WRITING TABLET

Matthew S. Piotrowski, 2952 Deegen Dr., Bonita, Calif. 92002

Filed Feb. 19, 1991, Ser. No. 656,586

Int. Cl.[5] F21K *2/00*

U.S. Cl. 362—34 6 Claims



1. An illuminated underwater writing tablet comprising:

an elongated tablet sheet of plastic material having a top edge, a bottom edge, and laterally spaced side edges, said tablet sheet having a predetermined width W1 and a predetermined thickness T1;

an elongated tubular light source housing having a predeter-

mined length L1 that is greater than W1, said light source housing being oriented transversely to the longitudinal axis of said tablet sheet;

said light source housing having a closed left end and an open right end;

a removable end cap for the right end of said light source housing and means for tethering said end cap to said light source housing when the end cap has been removed;

said light source housing having a longitudinally extending cutout slot whose length is W1 and whose width is T1 and the top edge of said tablet sheet is received in said cutout slot; and

A chemically activated light stick removably stored in said light source housing which when activated will illuminate said tablet sheet by directing light through the interior of said tablet sheet.

5,083,243

LAMP FOR MOTOR VEHICLES INCLUDING FOG WARNING OR BACKUP LAMP

Annerose Paulat, Bietigheim-Bissingen, and Hans-Joachim Wirth, Oberstenfeld, both of Fed. Rep. of Germany, assignors to SWF Auto-Electric GmbH, Bietigheim-Bissingen, Fed. Rep. of Germany

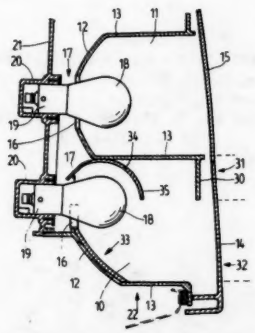
PCT No. PCT/EP89/01430, § 371 Date Aug. 7, 1990, § 102(e) Date Aug. 7, 1990, PCT Pub. No. WO90/06246, PCT Pub. Date Jun. 14, 1990

PCT Filed Nov. 25, 1989, Ser. No. 572,970

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1988, 3841501

Int. Cl.[5] B60Q *1/26*

U.S. Cl. 362—61 **6 Claims**



1. A lamp installation for motor vehicles comprising, two adjacent lamp compartments one of said compartments comprising a vehicle fog or back up light, each compartment having a back and an open front end, each lamp compartment open front covered by a transparent cover, a bulb in each lamp compartment, the bulb in said one of said lamp compartments projecting into said one of said lamp compartments from one side of the back thereof adjacent the other of said lamp compartments, a parabolic reflector mounted within said one compartment along the other side from said bulb, reflecting light from said bulb to said cover, light blocking means extending across said one lamp compartment on said one side adjacent the other of said lamp compartments, said light blocking means lying within said transparent cover and partially blocking said transparent cover to define a light transmitting portion of said transparent cover on the other side of said one of said lamp compartments from said light blocking means and bulb, and wherein the side to side width of said one lamp compartment whereat said bulb is located is substantially greater than the side to side width of said light transmitting portion of said transparent cover at the front of said one of said lamp compartments.

5,083,244

HEADLIGHT FOR MOTOR VEHICLE

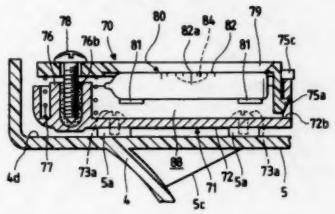
Katutada Shirai; Hideharu Mochizuki; Yasushi Ohtuska, and Kenji Miyazawa, all of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1990, Ser. No. 624,868

Claims priority, application Japan, Dec. 27, 1989, 1-336265; Dec. 28, 1989, 1-338385; Dec. 28, 1989, 1-338386; Mar. 29, 1990, 2-78630

Int. Cl.[5] B60Q *1/02*

U.S. Cl. 362—61 **10 Claims**



1. A headlight for a motor vehicle of an aiming device moving type in which an aiming device can be aimed vertically and horizontally relative to a reference member so as to adjust the angle of the direction of emission of light from said headlight, wherein the improvement comprises a level for measuring the angle of the elevational direction of said emission attached in a prescribed position relative to said aiming device, said level comprising a casing made of a high-thermal-conductivity material and a bubble vial housed in said casing.

5,083,245

LAMP ASSEMBLY

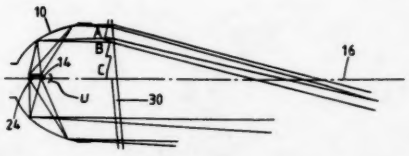
William S. Fray, and David E. Ballinger, both of Walsall, England, assignors to Carello Lighting plc, England

Filed Nov. 29, 1990, Ser. No. 621,254

Claims priority, application United Kingdom, Dec. 9, 1989, 8927903

Int. Cl.[5] B60Q *1/03*

U.S. Cl. 362—61 **9 Claims**



1. A lamp assembly comprising a reflector having a focus, means for supporting a light source at a predetermined position relative to said focus, and a transparent lens element positioned so that reflected light from the light source passes therethrough, said supporting means being adapted to support the light source behind said focus without shielding between the light source and said reflector in use, and said transparent lens elements having one or more prisms thereon which are adapted to re-direct reflected light from an upper part of the reflector downwardly.

5,083,246

HELMET MOUNTED AVIATION NIGHT VISION ILLUMINATING DEVICE

Jesse A. Lambert, 17 S. Nancy St., Daleville, Ala. 36322

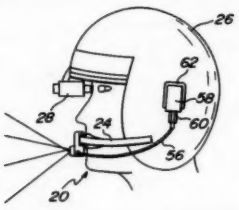
Filed Dec. 7, 1990, Ser. No. 624,004

Int. Cl.[5] B64D *47/02*

U.S. Cl. 362—62 **20 Claims**

1. Apparatus for illuminating a portion of a cockpit of an

aircraft utilizing a night vision imaging system, said apparatus comprising illumination means worn by a pilot of said aircraft for producing a field of illumination which is sufficiently high so that an object located within the field of said illumination



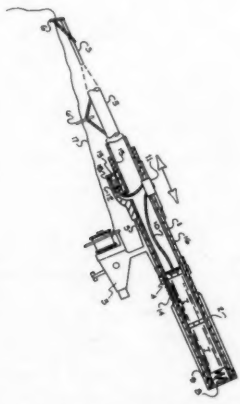
may be readily distinguished by said pilot, yet is sufficiently low that it will not adversely affect operation of said night vision imaging system, and manually actuatable means arranged to be actuated by a lip or tongue of the pilot for causing said illumination.

5,083,247

FISHING ROD LIGHTING SYSTEM

Randolph W. Robinson, R.R. 6, Lindsay, Ontario, Canada K9V 4R6 , and John-Willi Weitz, Box 883, Lindsay, Ontario, Canada K9V 4R6

Filed Feb. 4, 1991, Ser. No. 650,029
Claims priority, application Canada, Feb. 13, 1990, 2009972
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—109 **8 Claims**



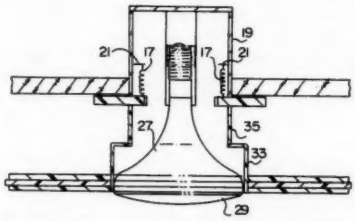
1. A fishing rod comprising a handle having a grip part and including fixed-position means for mounting a fishing-line reel thereon between the grip part and a pole part, extending forward from the handle, provided with fishing-line eyelets, and light beam producing means on the fishing rod immediately forward of the said fixed-position means and adapted, when energized, to direct a beam of light forward, the optical axis of the beam of light being coincident with a reference line passing centrally through the fishing-line eyelets, to render visible, under poor ambient light conditions, the eyelets and any fishing line passing therethrough.

5,083,248

METHOD AND APPARATUS FOR RETROFITTING FLUSH MOUNT TRIM TO EXISTING RECESSED LIGHT FIXTURE

Marc A. Troy, Forest Hills, N.Y., assignor to Fredrick Ramond, Inc., Cerritos, Calif.

Filed Jan. 10, 1990, Ser. No. 462,815
Int. Cl.[5] F21S *1/02*
U.S. Cl. 362—147 **4 Claims**



1. An apparatus for converting a recessed lighting fixture having bracket means installed within a ceiling to a flush mount lighting fixture comprising:

(a) trim member having the appearance of a flush mount light fixture;

(b) a substantially vertically disposed spring means having a first end coupled to said trim member and a second end for coupling to said bracket means;

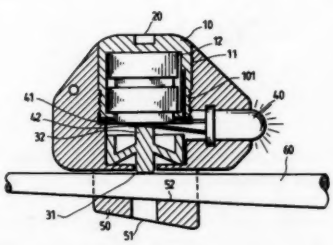
(c) at least one socket extender for coupling to a socket within said recessed lighting fixture and for receiving a light bulb.

5,083,249

LIGHT MARKER FOR FISHING ROD

Liang-Tsai Chen, No. 1, Alley 40, Lane 161, Ku Shan First St., Ku Shan, Kaoshiung, Taiwan

Filed Apr. 29, 1991, Ser. No. 692,916
Int. Cl.[5] F21M *5/00*
U.S. Cl. 362—191 **1 Claim**



1. A light marker for fishing rod comprising:

a main body having a plurality of female threads in an inner periphery of said main body;

a battery unit disposed in an upper center of said main body;

said battery unit having two cells in parallel, a battery conductor at one side of said battery unit, and a plurality of male threads at a lower outer periphery of said battery unit;

said battery unit having a coin slot on a top end of said battery unit;

a light-emitting diode disposed at a front portion of said main body;

said light-emitting diode having a ring-shaped upper conductor extending rearwardly and a rod-shaped lower conductor extending rearwardly;

a cupped pusher disposed below said battery unit;

said cupped pusher having a lower protrusion extending

downwardly from a bottom center of said cupped pusher and an upper protrusion extending upwardly from a bottom center of said cupped pusher;

a holder disposed beneath said main body;

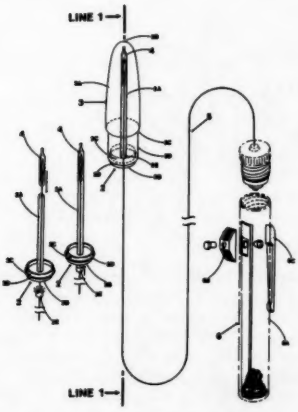
said holder having a vertical through hole and a transverse taper hole therein.

5,083,250

FLOATABLE BALLON LIGHT ACCESSORY

Clarence D. Malcolm, 4925 O'Sullivan Dr., Los Angeles, Calif. 90032

Filed Jan. 22, 1991, Ser. No. 643,354
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—253 **17 Claims**



1. A floatable balloon light accessory comprising:

a light-weight plastic housing insertable into the orifice of a balloon to prevent escape of gas from within said balloon,

electric light means mounted within said housing, and

means for supplying electrical energy to said light means comprising a hollow cylindrical housing having a control switch mounted thereon,

at least one battery located within said cylindrical housing, and

an electrical cable connecting said control switch to said light means.

5,083,251

TRANSITION ILLUMINATION LAMP

Robert Parker, 411 Rolling Hills La., Alamo, Calif. 94507

Filed Nov. 13, 1990, Ser. No. 612,581
Int. Cl.[5] F21V *9/10*
U.S. Cl. 362—255 **19 Claims**

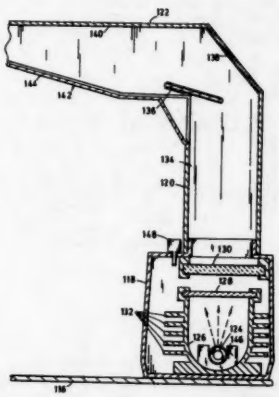
1. A thermochromic jacket adapted to be placed around a light source, said jacket consisting essentially of a material containing thermochromic material disposed throughout; whereby said jacket controls the quantity of light transmitted therethrough as a function of the temperature of said light source.

5,083,252

APPARATUS FOR PRODUCING LIGHT DISTRIBUTIONS

Kevin P. McGuire, Rochester, N.Y., assignor to Tailored Lighting Company, Inc., Pittsford, N.Y.

Filed Apr. 19, 1990, Ser. No. 512,436
Int. Cl.[5] F21V *9/00*
U.S. Cl. 362—293 **5 Claims**



1. An apparatus for providing a light distribution, comprising:

(a) means for providing at least one beam of polychromatic light with a continuous spectral line width of at least one nanometer and a wavelength of from about 1 to about 1,000,000 nanometers;

(b) means for guiding said beam of polychromatic light;

(c) adjustable means for selectively attenuating spectral component frequencies of a portion of said beam of polychromatic light wherein

1. said means for selectively attenuating spectral component frequencies attenuates red light more than it attenuates orange light;

2. said means for selectively attenuating spectral component frequencies attenuates orange light more than it attenuates yellow light;

3. said means for selectively attenuating spectral component frequencies attenuates yellow light more than it attenuates green light;

4. said means for selectively attenuating spectral component frequencies attenuates green light more than it attenuates blue light;

5. said means for selectively attenuating spectral component frequencies attenuates blue light more than it attenuates violet light;

(d) means for increasing the entropy of an attenuated beam of polychromatic light to effect randomization of spectral frequencies, wherein said means for increasing the entropy of an attenuated beam of polychromatic light is comprised of a lenticular lens;

(e) means for varying the color temperature of said beam of polychromatic light, wherein:

1. said means for varying the color temperature is comprised of at least two optical filters and means for simultaneously moving each of said optical filters in different directions, wherein:

(a) said means for moving each of said optical filters in different directions is comprised of a knob, which is operatively connected to each of said optical filters, wherein movement of said knob causes movement of

both of said optical filters, thereby changing the distance between said filters and the extent to which said filters interact with said beam of polychromatic light.

5,083,253

LIGHTING UNIT

Walter Hahnel, Bandon, County Cork, Ireland

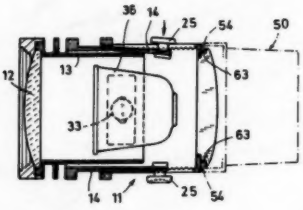
PCT No. PCT/EP89/00030, § 371 Date Nov. 3, 1989, § 102(e) Date Nov. 3, 1989, PCT Pub. No. WO89/06770, PCT Pub. Date Jul. 27, 1989

PCT Filed Jan. 13, 1989, Ser. No. 439,401

Claims priority, application Ireland, Jan. 14, 1988, 102/88

Int. Cl.[5] F21V *7/00*

U.S. Cl. 362—306 **13 Claims**



1. A lighting unit comprising:

a housing;

a sub-housing slidably mounted in the housing;

a reflector mounted within the housing;

a removable light source fixed within the housing and disposed within the region of the reflector;

a focussing lens fixed in the sub-housing so as to be movably mounted on the housing forwardly of the light source, the lens at least being movable between positions to provide floodlight and spotlight beams;

resilient arms extending in the direction of relative movement between the sub-housing and the housing and being fastened to the sub-housing;

finger grips mounted on free ends of the resilient arms;

cooperating teeth provided on an inner side of said housing and on said resilient arms, respectively, for releasably securing said sub-housing to said housing at different positions.

5,083,254

STARTING CIRCUIT FOR A SWITCHING POWER SUPPLY HAVING SWITCHING MEANS RESPONSIVE TO A SHUTOFF COMMAND

Martin Feldtkeller, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 1, 1990, Ser. No. 591,135

Claims priority, application European Pat. Off., Sep. 29, 1989, 89118085.3

Int. Cl.[5] H02M *3/335*

U.S. Cl. 363—21 **5 Claims**

1. Circuit configuration for a switching power supply, comprising:

1) an electric switch;

2) a transformer having

a) a primary winding in a circuit of a direct voltage source connected in series with said electric switch, and

b) a secondary winding to be connected to a load;

3) an integratable control circuit connected to said switch for switching said switch on and off;

4) a charge capacitor connected parallel to said control circuit;

5) a start-up resistor connected between said charge capacitor and the direct voltage source;

6) another transformer winding connected parallel to said charge capacitor,

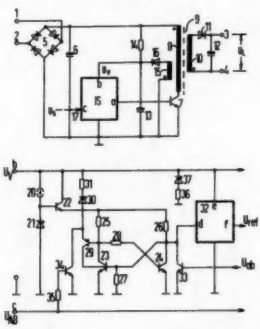
7) means for feeding an externally issued shutoff command to said control circuit;

8) during operation of the switching power supply

a) in an inactive state in which said control circuit cannot switch said switch, said control circuit receives a supply voltage from said charge capacitor,

b) in an active state in which said control circuit can switch said switch, said control circuit draws the supply voltage from said other transformer winding;

c) when the supply voltage is increasing said control circuit changes from the inactive state to the active state



whenever an input switching threshold is exceeded, and when the supply voltage is decreasing said control circuit returns from the active state to the inactive state whenever a shutoff threshold fails to be attained; and

d) whenever the externally issued shutoff command is present, the supply voltage reaches a level exceeding the input switching threshold, but said control circuit does not switch on said switch; and

9) switching means for preventing said control circuit from changing to the active state when a shutoff command is present.

5,083,255

INVERTER WITH ELECTRICALLY CONTROLLABLE OUTPUT

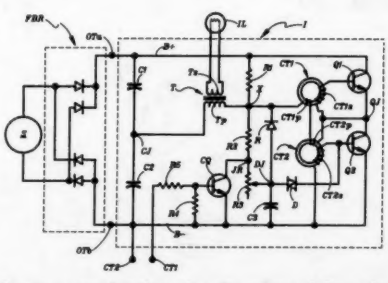
Ole K. Nilssen, Caesar Dr., Rte. 5, Barrington, Ill. 60010

Continuation of Ser. No. 667,691, Nov. 2, 1984, abandoned, which is a continuation-in-part of Ser. No. 487,817, Apr. 22, 1983, Pat. No. 4,506,318. This application Jul. 5, 1990, Ser. No. 548,197

The portion of the term of this patent subsequent to Mar. 19, 2002, has been disclaimed.

Int. Cl.[5] H02M *7/44*

U.S. Cl. 363—132 **14 Claims**



1. A power supply adapted to be powered from the relatively low frequency voltage on a regular electric power line and to provide a relatively high frequency output voltage, comprising:

rectifier means connected with said power line and operative to provide a DC supply voltage, said DC supply voltage being characterized by having an instantaneous unidirectional magnitude that is substantially equal to the instantaneous absolute magnitude of said low frequency voltage, whereby said instantaneous unidirectional magnitude increases above a certain threshold level once for each half-cycle of said relatively low frequency voltage and decreases below said certain threshold level once for each of said half-cycles;

inverter connected with said DC supply voltage and operative to provide said relatively high frequency output voltage, said inverter characterized by: i) ceasing operation each time the instantaneous magnitude of said DC supply voltage decreases below said certain threshold level, ii) resuming operation each time after the magnitude of said DC supply voltage has increased above said certain threshold level, but only if provided with a trigger signal; and

electrically controllable trigger means operable to provide said trigger signal to said inverter some pre-selected time-period after each time the magnitude of said DC supply voltage has increased above said certain threshold level, the duration of said pre-selected time-period being less than that of said half-period;

whereby, as long as said trigger signals are being provided, said inverter starts and stops operation once during each of said half-cycles, thereby providing said high frequency output voltage for a pre-selected fraction of the duration of each of said half-cycles.

5,083,256

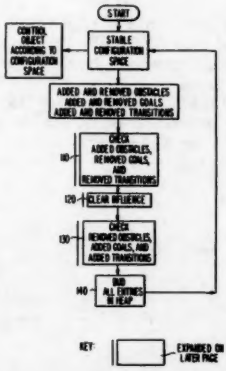
PATH PLANNING WITH TRANSITION CHANGES

Karen I. Trovato, Putnam Valley, and Leendert Dorst, Yorktown Heights, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 166,599, Mar. 9, 1988, Pat. No. 4,949,277. This application Oct. 17, 1989, Ser. No. 422,930

Int. Cl.[5] G06F *15/46, 15/48, 15/18*

U.S. Cl. 364—148 **2 Claims**



1. A method for controlling an object to follow a path comprising the steps of:

a) maintaining a stored configuration space having cost to goal and direction arrow values indicating the path or absence thereof from at least one state in the configuration space to at least one goal state in the configuration space;

b) receiving data indicating a change in a transition between states in the configuration space; and

c) differentially updating the configuration space to reflect the change, so that at least one cost to goal or one direction arrow value is changed; and

d) controlling the object to follow a path indicated by the undated configuration space.

5,083,257

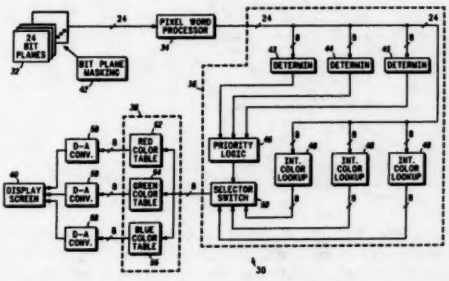
BIT PLANE PARTITIONING FOR GRAPHIC DISPLAYS

Peter D. Kennedy, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 343,769, Apr. 27, 1989, abandoned. This application Nov. 23, 1990, Ser. No. 617,488

Int. Cl.[5] G06F *3/14;* G09G *1/16*

U.S. Cl. 395—131 **6 Claims**



1. A graphics display system for displaying large numbers of classes of information comprising:

bit plane means for storing a plurality of bits of information, said bit plane means having a predetermined number of n bit planes corresponding to said plurality of bits of information;

said n bit planes arranged according to a priority of visual importance of said bits of information;

said bit plane means generating a pixel word having n bits of information;

said pixel word arranged into sets of information, said sets of information arranged in a priority corresponding to said priority of visual importance of said bits of information;

pixel word processor means coupled to said bit plane means to receive said pixel word;

said pixel word processor means for altering selective bits of information of said pixel word;

prioritizer means coupled to said pixel word processor means to receive said pixel word;

said prioritizer means for selecting the highest prioritized set of said sets of information and outputting said highest prioritized set of said sets of information;

said prioritizer means including:

a selector switch;

a plurality of intermediate color lookup table means coupled in parallel between said bit plane means and said selector switch; and

said plurality of intermediate color lookup table means for generating a p-bit (where p is an integer number representing the number of bits of information) definition signal defining a p-bit code corresponding to colors within said lookup table means for the highest prioritized information within each of said sets of information;

lookup table means coupled to said prioritizer means to receive said highest prioritized set;

said lookup table means for generating a plurality of sets of color information corresponding to said highest prioritized set, each of said plurality of sets representing a primary color displayed on the graphics display system;

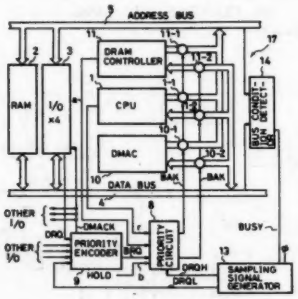
display screen means coupled to said lookup table means to receive said plurality of sets of color information; and

said display screen means for generating a graphics display picture.

5,083,258
PRIORITY CONTROL SYSTEM

Takashi Yamasaki, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1990, Ser. No. 593,708
Claims priority, application Japan, Oct. 24, 1989, 1-277529
Int. Cl.[5] G06F *13/18, 13/32*
U.S. Cl. 395—725 **2 Claims**



1. A priority control system for controlling access to a bus by a plurality of signal sources, each one of said signal sources generating a respective bus request signal to indicate that access to the bus is requested, said plurality of signal sources comprising a main group of signal sources and an auxiliary group of signal sources, the control system comprising:

first encoding means receiving the respective bus request signals of said main group and a selected auxiliary group bus request signal, said received bus request signals being prioritized, said first encoding means selecting the received bus request signal having the highest priority;

second encoding means receiving the respective bus request signals of said auxiliary group, said received auxiliary group bus request signals being prioritized, said second encoding means selecting the received auxiliary group bus request signal having the highest priority, the selected auxiliary group bus request signal coupled to said first encoding means;

means coupled to said first and second encoding means for selecting sampling of either one of said first or second encoding means to determine whether a bus request signal is received at the sampled encoding means; and

means coupled to the sampling means for controlling the sampling means to select sampling of said first encoding means while said bus is not busy and to select sampling of said second encoding means while said bus is busy.

5,083,259
COMPUTER BUS INTERCONNECTION DEVICE

Anthony J. Maresh, Brighton, and Craig A. Moore, Ypsilanti, both of Mich., assignors to Xycom, Inc., Saline, Mich.

Continuation of Ser. No. 281,261, Dec. 7, 1988, abandoned. This application May 6, 1991, Ser. No. 698,255
Int. Cl.[5] G60F *13/40, 13/14, 13/38*
U.S. Cl. 395—325 **13 Claims**

1. An interface apparatus for interconnecting an AT computer having an AT bus with a VMEbus having a VMEbus backplane to allow the AT computer to respond to VMEbus slave requests as a VMEbus slave, comprising:

a circuit card having an AT bus disposed thereon for plugging directly into said VMEbus backplane and for receiving operating power from said VMEbus backplane;

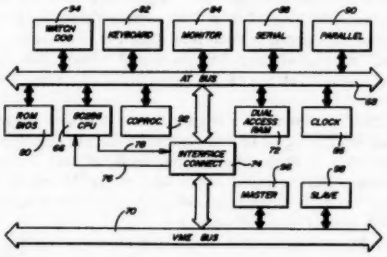
a central processing unit (CPU) disposed on said circuit card and connected to said AT bus and forming a portion of said AT computer;

a direct memory access (DMA) means connected to said AT bus and forming a portion of said AT computer;

interconnection means coupled to said AT bus and to said VMEbus, said interconnection means including bus arbiter means coupled to said DMA means and to said CPU for responding to slave requests from said VMEbus and for receiving and responding to DMA requests from said AT bus;

dual access random access memory (RAM) means coupled to said AT bus and to said VMEbus having means whereby both said AT bus and said VMEbus can access said RAM;

controller means coupled to said bus arbiter means, to said CPU and to said AT and VMEbuses and being responsive to said bus arbiter and to said CPU for controlling the



communication between said RAM means and said AT and VMEbuses;

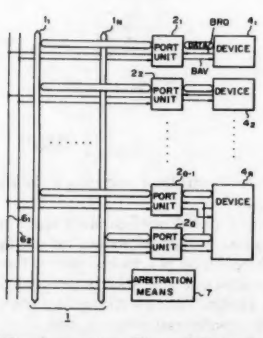
said bus arbiter, upon receipt of a slave request, causing said CPU to be placed in a hold state and inhibiting access to said AT bus by said DMA means and further issusing a slave grant signal to said controller means;

said controller means, upon receipt of said slave grant signal and in response to a request by said CPU to access said RAM, causing said RAM to place data on said VMEbus and thereafter causing a data transfer acknowledge (DTACK) signal to be issued to said VMEbus thereby indicating that said AT computer has responded to said slave request.

5,083,260
BUS ARBITRATION SYSTEM FOR CONCURRENT USE OF A SYSTEM BUS BY MORE THAN ONE DEVICE

Haruhiko Tsuchiya, Sagamihara, Japan, assignor to PFU Limited, Ishikawa, Japan

Filed Feb. 27, 1989, Ser. No. 315,888
Claims priority, application Japan, Feb. 29, 1988, 63-047822
Int. Cl.[5] G06F *13/364*
U.S. Cl. 395—325 **4 Claims**



1. A bus arbitration system disposed between a plurality of devices for granting use of a system bus having a data bus size equal to or larger than a port size of each of said plurality of

devices, said system bus comprises a plurality of partial buses, said bus arbitration system comprising:

each of said plurality of partial buses comprises a at least one of a plurality of signal lines of said system bus, said at least one signal line provided exclusively for each partial bus, each of said partial buses functioning as an individual bus, and a sum of data bus sizes of all of said partial buses equals the data bus size of said system bus;

a plurality of port units each of which is connected, on a first side, to a corresponding one of said plurality of partial buses, wherein more than one port unit is connected to each partial bus, and each of said devices is connected to a corresponding one or more of said plurality of port units on a second side of said corresponding one or more of said plurality of port units so that the port size of said each device equals a total port size of said corresponding one or more of said plurality of port units connected to said each device; and

an arbitration means which comprises a plurality of partial bus arbitration means, each of said plurality of partial bus arbitration means connected to a corresponding one of said partial buses, and connected through respective control lines with each of said port units connected to said corresponding one of the partial buses and each of the partial bus arbitration means carries out an arbitration between said plurality of port units connected to the corresponding one partial bus, for granting use of said corresponding one partial bus;

each of said port units sends a bus request signal identifying itself to one of said partial bus arbitration means, upon receiving a request for use of the partial bus corresponding to said each port unit from the device connected to said each port unit;

each of said plurality of partial bus arbitration means, after carrying out arbitration, outputs a respective grant signal which grants use of said corresponding partial bus, for one port unit among the port units which sent said bus request signal to said each partial bus arbitration means; and

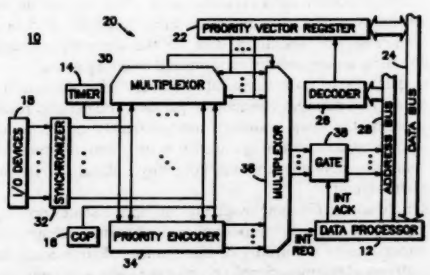
said arbitration means further comprises a combination grant gate means coupled to said plurality of partial bus arbitration means for simultaneously outputting grant signals to a combination of port units for a bus request from a device connected to said combination of port units.

5,083,261

DYNAMICALLY ALTERABLE INTERRUPT PRIORITY CIRCUIT

Brian F. Wilkie, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 3, 1983, Ser. No. 548,527
Int. Cl.[5] G06I *13/26*
U.S. Cl. 395—725 **7 Claims**



1. In an interrupt priority circuit comprising first means for receiving a plurality of interrupt signals, second means coupled to said first means for selecting one of said interrupt signals according to a predetermined priority scheme and third means coupled to said second means for producing an output signal indicating said selected one of said interrupt signals, the improvement comprising:

fourth means for receiving and storing an input signal which designates a highest priority one of said plurality of interrupt signals;

first register means for storing said input signal;

fifth means coupled to said first register means and responsive to said plurality of interrupt signals for providing an enable signal to said third means if said highest priority interrupt signal signal is received; and

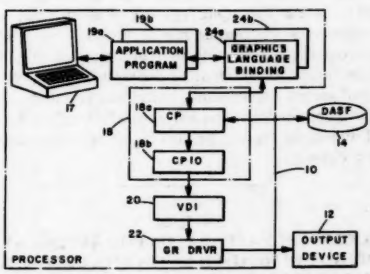
wherein said third means is coupled to said fifth means to provide that said output of said third means indicates said highest priority interrupt signal if said means provides said enable signal and indicates said one of said interrupt signals selected by said second means otherwise.

5,083,262

LANGUAGE BINDINGS FOR GRAPHICS FUNCTIONS TO ENABLE ONE APPLICATION PROGRAM TO BE USED IN DIFFERENT PROCESSING ENVIRONMENTS

Lyle E. Haff, Jr., Owego, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 856,710, Apr. 28, 1986, abandoned.
This application Sep. 27, 1990, Ser. No. 590,327
Int. Cl.[5] G06F *9/45, 15/60, 9/44*
U.S. Cl. 395—500 **14 Claims**



1. A linkage system for providing a set of bindings which enable a graphics application program written in a predetermined program language to be executed in one or the other of two different graphical processor environments independent of the programming language, comprising

a graphics output device;

a graphics application process means for providing a series of user language-specific process statements defining a graph;

a graphics process means responsive to graphics commands and graphics attributes for producing device signals corresponding to said graph;

a graphics output device driver connected to said graphics process means and to said graphics output device and responsive to said device signals for producing said graph on said graphics output device;

a graphics language binding means in communication with said graphics application process means in one or the other of said two different graphical processor environments for translating said process statements into said graphics commands and graphics attributes;

a transfer structure means in said graphics language binding means for building a data transfer structure; and

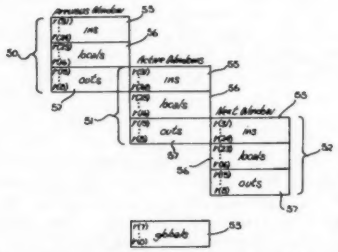
a transfer process means in said graphics language binding means for transferring said graphics commands and graphics attributes from said language binding means to said graphics process means in one or the other of said two different graphical processor environments, said graphics attributes being transferred in said data transfer structure.

5,083,263

BISC WITH INTERCONNECTED REGISTER RING AND SELECTIVELY OPERATING PORTION OF THE RING AS A CONVENTIONAL COMPUTER

William Joy, Palo Alto, and Robert B. Garner, San Jose, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 28, 1988, Ser. No. 225,343
Int. Cl.[5] G06F *9/34*
U.S. Cl. 395—425 3 Claims



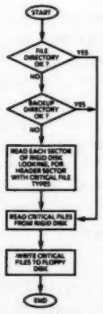
1. An integer processing unit for a reduced instruction set computer comprising a plurality of physical registers arranged in groups, each of said register groups comprising a number of input registers, a similar number of output registers, and a number of local registers, said register groups being physically arranged such that the input registers of each group are the same registers as the output registers of the next adjacent register group thereby forming an interconnected ring of register groups, means for designating the register group presently active, and means for selecting individual register groups to operate as a conventional computer by selectively isolating the selected individual register groups from the remainder of the register groups.

5,083,264

PROCESS AND APPARATUS FOR SAVING AND RESTORING CRITICAL FILES ON THE DISK MEMORY OF AN ELECTROSTATOGRAPHIC REPRODUCTION MACHINE

Dale T. Platteter, Fairport; Robert S. Westfall, Rochester, and Jeff C. Carter, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 24, 1989, Ser. No. 342,008
Int. Cl.[5] G06F *11/20*
U.S. Cl. 395—575 9 Claims



9. A process for safeguarding critical files on a hard disk of a xerographic duplicator to enable said critical files to be saved in response to a hard disk fault, said hard disk storing a plurality of files including said critical files for operating said duplicator and a file directory for accessing said files, and a floppy disk port for reading and writing data between a floppy disk and said hard disk, comprising the steps of:

a) providing a header for each of said files on said hard disk;

b) locating each header so that said headers comprise a first valid sector prior to a start of the file associated therewith;

c) inserting data in each of said headers for identifying critical files from other files on said hard disk;

d) making said headers transparent to said file directory whereby said headers can be used to access said files without using said file directory when said file directory is corrupt;

e) using either said file directory or said headers, identifying and reading said critical files onto blank floppy disks through said port whereby to prevent loss or damage of said critical files while said hard disk fault is being corrected or said hard disk replaced;

f) rebuilding said hard disk to remove said fault;

g) where said hard disk fault cannot be corrected by rebuilding said disk, replacing said hard disk with a new hard disk; and

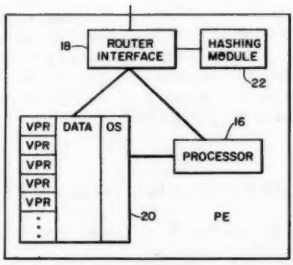
h) following rebuilding or replacing of said hard disk, writing said critical files from said blank floppy disks back to said hard disk.

5,083,265

BULK-SYNCHRONOUS PARALLEL COMPUTER

Leslie G. Valiant, Belmont, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.

Filed Apr. 17, 1990, Ser. No. 510,090
Int. Cl.[5] G06F *15/16*
U.S. Cl. 395—800 25 Claims



1. A multiple instruction, multiple data, parallel processor system comprising:

a plurality of computational and memory elements;

a hashing module for providing each of the computational elements with a common hashing function associated therewith for assigning data to the memory elements creating an apparently randomized memory space;

a parallel router for routing data transfers between computational and memory elements in parallel, the parallel router routing the data transfers independently of continued computation and storage access in the computational and memory elements and masking any substantial latency therein; and

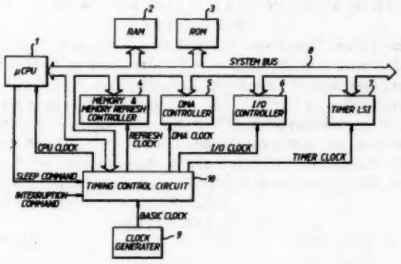
a synchronizer for synchronizing multiple instruction computational tasks in individual computational elements in supersteps of a plurality of computational steps such that individual computational and routing tasks are completed in all synchronized computational elements before the elements proceed to subsequent tasks, wherein each computational element may proceed through the superstep without needing results from other computational elements.

5,083,266

MICROCOMPUTER WHICH ENTERS SLEEP MODE FOR A PREDETERMINED PERIOD OF TIME ON RESPONSE TO AN ACTIVITY OF AN INPUT/OUTPUT DEVICE

Minoru Watanabe, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 24, 1987, Ser. No. 137,667
Claims priority, application Japan, Dec. 26, 1986, 61-315325
Int. Cl.[5] G06F *1/32*
U.S. Cl. 395—275 **16 Claims**



1. A computer system having at least one associated input-/output device, comprising:

processing means, responsive to clock signals, for detecting an activity with an input/output device which indicates a time period for waiting for a response from the input/output device and for producing a sleep mode execution command indicative thereof; and

timing control means for executing a sleep mode during which a rate of said clock signals for said processing means is changed, said sleep mode being executed for a predetermined time in response to said sleep mode execution command,

said processing means also checking whether or not the response from the input/output device exists, after said timing control means complete executing the sleep mode.

5,083,267

HORIZONTAL COMPUTER HAVING REGISTER MULTICONNECT FOR EXECUTION OF AN INSTRUCTION LOOP WITH RECURRANCE

Bantwal R. Rau, Los Gatos, and Ross A. Towle, Union City, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 296,391, Jan. 9, 1989, abandoned, which is a continuation of Ser. No. 45,883, May 1, 1987, abandoned. This application Dec. 21, 1989, Ser. No. 456,627
Int. Cl.[5] G06F *9/00, 13/02, 15/16, 15/31*
U.S. Cl. 395—375 **6 Claims**

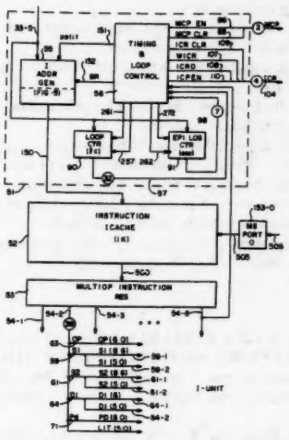
1. A computer system for performing a plurality of iterations of a loop of instructions, where a result operand from one iteration of the loop is used as a source operand in a subsequent iteration of said loop, the system comprising:

a processing unit having a plurality of processors some of which provide result operands and some of which perform operations on source operands;

a multiconnect unit for storing operands at addressable locations;

an instruction unit including a loop counter for storing a loop count representing the number of iterations of said loop, said loop count having a loop count range which includes an ending value and means for specifying source address offsets and result address offsets relative to a modifiable pointer; and

invariant addressing means operative to provide the modifiable pointer, the pointer having a value determined by the iteration value stored by the instruction unit; to combine the pointer with a result address offset during one iteration to provide a result address and to cause a result operand to be stored in the multiconnect unit at a location designated by said result address; and to combine the pointer with one of the source address offsets during another iteration to



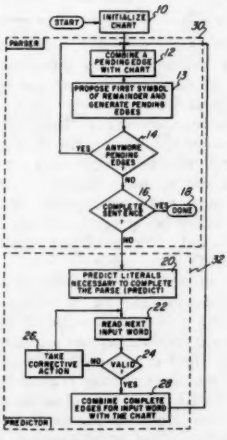
provide a source address that designates the location in which the result operand was stored and to retrieve the operand from said location for use as a source operand.

5,083,268

SYSTEM AND METHOD FOR PARSING NATURAL LANGUAGE BY UNIFYING LEXICAL FEATURES OF WORDS

Charles T. Hemphill, Coppell, and Frank Vlach, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 919,156, Oct. 15, 1986, abandoned. This application Aug. 27, 1990, Ser. No. 574,557
Int. Cl.[5] G06F *15/38*
U.S. Cl. 395—12 **19 Claims**



1. A method for recognizing a sentence having a plurality of words, performed by a computer and comprising the steps of:

(a) accepting a predefined grammar having terminal and non-terminal elements for defining allowable sentence structues;

(b) accepting a predefined lexicon having entries for defining terminal elements of the grammar in terms of linguistic or semantic features;
(c) predicting valid next lexical entries for any current partial sentences according to the grammar;
(d) reading input words;
(e) comparing features of the input words with the features of the valid next lexical entries;
(f) rejecting input words which have features which do not match valid next lexical entries;
(g) accepting input words which have features which match a valid next lexical entry;
(h) generating partial sentences by combining accepted input words consistent with the grammar and lexicon;
(i) unifying the lexical features of the words forming the partial sentences so that the partial sentences are self-consistent with respect to such features; and
(j) repeating steps (c) through (i) until a complete sentence is formed as defined in the grammar.

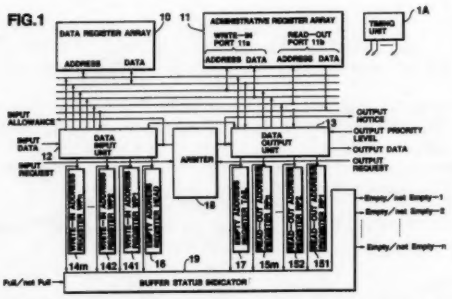
5,083,269

BUFFER DEVICE SUITABLE FOR ASYNCHRONOUS TRANSFER MODE COMMUNICATION

Yasuro Syobatake, and Yoshinari Kumaki, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 8, 1990, Ser. No. 462,118
Claims priority, application Japan, Jan. 10, 1989, 1-3566
Int. Cl.[5] G06F *3/00, 7/36;* **G11C** *7/00*
U.S. Cl. 395—425 **4 Claims**

FIG.1



1. A buffer device for receiving, temporarily storing and transmitting data accompanied by information indicating a priority level of the data, where there is at least two distinct priority levels, the device comprising:

data register array including a plurality of data register means for temporarily storing the data, the data register means being divided into empty data register means storing no data and as many number of imaginary FIFO queues as a number of distinct priority levels, each imaginary FIFO queue being corresponding to each distinct priority level, and a number of data register means in each imaginary FIFO queue being flexible;

administrative register array comprised of a two port RAM means for modifiably storing the administrative information containing pointer chains specifying the imaginary FIFO queues in the data register array, having a write-in port through which the administrative information can be written into the administrative register array and a read-out port through which the administrative information can be read out from the administrative register array which are independently operable;

data input means for receiving new data, entering the new data into one empty data register means, and modifying the pointer chain specifying the imaginary FIFO queue corresponding to a priority level of the new data indicated by the information accompanying the new data, such that the pointer chain is extended to include that one empty data register means into which the new data is entered at an end of that imaginary FIFO queue; and

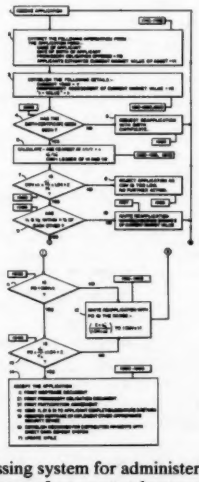
data output means for taking out data stored in one data register means, transmitting the data, and modifying the pointer chain specifying the imaginary FIFO queue corresponding to a priority level of that data, such that the pointer chain is shortened to exclude that one data register means from which the data is taken from a top of that imaginary FIFO queue.

5,083,270

METHOD AND APPARATUS FOR RELEASING VALUE OF AN ASSET

Hyman Gross, New York, N.Y.; Melvin J. Hatcher, Cambridge, and Jonathan R. P. Checkley, London, both of United Kingdom, assignors to Interforce, Ltd., England

Continuation of Ser. No. 534,361, Jun. 7, 1990, abandoned, which is a continuation of Ser. No. 441,222, Nov. 27, 1989, abandoned, which is a continuation of Ser. No. 267,688, Nov. 2, 1988, abandoned, which is a continuation of Ser. No. 10,450, Feb. 3, 1987, abandoned. This application Dec. 14, 1990, Ser. No. 628,938
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—408 **18 Claims**



1. A data processing system for administering a program for releasing to an owner of an asset at least a portion of its cash value without transfer of ownership of said asset and without transfer of control thereof, said system determining eligibility for said program and determining program payouts, said system comprising:

means for entering application data derived from an application by said owner to participate in said program, said application data including date of birth of said owner, an amount of a promissory obligation to be offered for participation in said program, and an estimate by said owner of current market value of said asset;

means for determining the probability of death of said owner during any particular year based on said date of birth;

means for determining, based on said current market value and said probability, whether said asset will support a predetermined minimum distribution of cash and for rejecting said application if said asset has insufficient value to support said minimum distribution;

means for generating a mortgage document against said asset and a promissory note to be signed by said owner, said promissory note being in the amount of said promissory obligation, being secured by said mortgage, and being payable on death of said owner;

means for computing and making periodic distributions to participating owners based on the current probability of death and the amount of the promissory obligation of each owner;

means for entering the death of said owner;

means for notifying program personnel to procure payment of said promissory obligation from the estate of said owner and, if said estate cannot otherwise settle said promissory obligation, to procure sale of said asset and reimbursement from the proceeds thereof; and

means for terminating said mortgage on receipt of said payment, whereby:

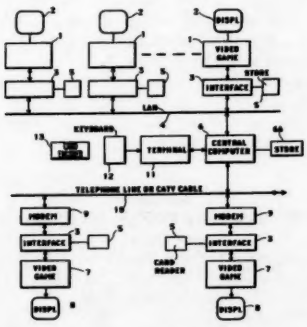
said owner retains ownership and control of said asset during his lifetime, while value of said asset is available to him as cash.

5,083,271

TOURNAMENT DATA SYSTEM WITH GAME SCORE COMMUNICATION BETWEEN REMOTE PLAYER TERMINAL AND CENTRAL COMPUTER

Kerry E. Thacher, Winnipeg; Gary H. Sumka, Oakville; Mohamed A. Barakat, Winnipeg; John S. Hancharyk, Winnipeg, all of Canada, and John A. Klayh, 333 Kennedy Street, Winnipeg, Canada, assignors to John A. Klayh

Continuation of Ser. No. 749,311, Jun. 26, 1985, abandoned.
This application Aug. 3, 1988, Ser. No. 228,847
Claims priority, application Canada, Jun. 27, 1984, 457628
Int. Cl.[5] G06F *15/44*; A63F *9/22*
U.S. Cl. 364—411 **43 Claims**



1. A tournament system comprising:

(a) a plurality of games for automatically generating score signals,

(b) a central computer linked to said games for automatically polling and receiving said score signals achieved on said games by players in a tournament,

(c) means for storing handicap values relating to players of said games at said central computer,

(d) means at said games for transmitting player identification signals to said computer,

(e) means for modifying scores achieved on said games at the central computer by the handicap value associated with the player playing the games to produce a resultant score, and

(f) means for automatically downloading from said central computer a winning score modified by the handicap value for display at said games.

2. A tournament system comprising:

(a) a plurality of games of different kinds for automatically generating score signals as the games are played and for automatically transmitting said signals,

(b) a central computer linked to said games for automatically receiving said score signals achieved on said games by players in a tournament,

(c) means for storing a handicap value relating to the kind of game at either the games or the central computer,

(d) means for determining scores achieved on said games modified by the handicap value associated with each of said games and automatically establishing a winner of the tournament based on said modified scores.

18. An electronic tournament system comprising:

(a) a plurality of electronic games of different types each including a display, a game data bus, a game address bus, a game memory for storing score data appearing on the data bus at addresses specified by data appearing on the address bus and game processor means for controlling a game in which it is included,

(b) an interface circuit associated with each game comprising:

(i) interface memory means having address and data ports,

(ii) an interface address bus connected between the address ports and the game address bus,

(iii) an interface data bus connected between the data port and the game data bus,

whereby data stored in the game memory is similarly stored in the interface memory means,

(iv) a communication port,

(v) means for automatically reading the data stored in the interface memory means to obtain score data and for transmitting the score data to the communication port,

(vi) a central processor for controlling said interface circuit,

(c) a central computer including means for communication with the interface circuits via the communication port, for transmitting polling signals to the interface circuits and thereby initiating said transmission of score data for reception by the central computer,

(d) each interface circuit further including an overlay memory for storage of pointer signals relating to score addresses of the interface memory means where score data for the associated electronic game are stored, means for reading the overlay memory and for converting the pointer signals to said score address signals, means for switching the address port of the interface memory means to receive said score address signals, and means for switching the data port of the interface memory means whereby the score data stored therein may be read for transmission to the central computer.

25. A tournament system comprising:

(a) an electronic game for automatically generating score signals as the game is played,

(b) means for applying the score signals to a data link port for transmission to a central computer in response to automatic polling from said central computer,

(c) a keyboard means, processor means for causing operation of a different play and different display on the display of said game upon operation of the keyboard means by said player.

31. A tournament system comprising:

(a) an electronic game for automatically generating score signals as the game is played,

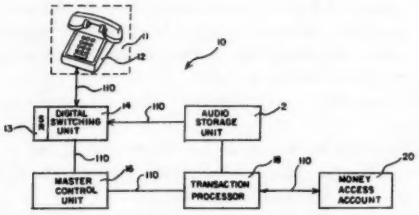
(b) means for applying the score signals to a data link port for transmission to a central computer in response to automatic polling from said central computer, and

(c) means for storing alternate game control signals whereby an alternate game can be played generating alternate scores.

5,083,272
INTERACTIVE TELEPHONE LOTTERY SYSTEM WITH A VERIFICATION CODE

Robert W. Walker, Glen Ellyn; Ricki S. Karp, Chicago, and John S. Hayter, Glencoe, all of Ill., assignors to Britcanus Corporation, Chicago, Ill.

Filed Nov. 2, 1988, Ser. No. 266,103
Int. Cl.[5] G06F *15/28, 15/44*
U.S. Cl. 364—412 **10 Claims**



1. An interactive telephone lottery system for playing a lottery game comprising:

a telephone disposed at a user's location, said telephone including a touchtone keypad operative to generate dual tone multi-frequency output signals and said telephone operative to transmit voice signals and receive an input signal;

switching means operatively connected to said telephone for interfacing said input and output signals from said telephone to a telephone communication network;

money access account means having an account processor for processing transactions involving a user's account, said account having a pre-established source of funds;

a lottery game processor operatively connected to said switching means and to said account processor through said communication network, said access processor including a program including logic means for a) receiving a dual tone multi-frequency signal from said telephone, said signal identifying a lottery transaction and the amount of said lottery transaction, b) communicating with said money access account processor to authorize said transaction, c) upon receiving authorization from said money access account processor, debiting the amount of said transaction from said account, d) completing said lottery transaction, and 3) generating a status signal indicating the status of said lottery transaction;

means for communicating said status signal to said telephone; and

interactive validation means for verifying data associated with the lottery transaction entered by the user, said interactive validation means including means for checking said data entered by the user, means for generating a validation code corresponding to said data means for prompting said user to enter said validation code on said keyboard, and means for comparing the validation code entered by the user with said lottery transaction entered by the user; means for preventing completion of said lottery transaction.

5,083,273
TEMPERATURE DETECTION FOR ELECTROMAGENTIC CLUTCH OF VEHICLE

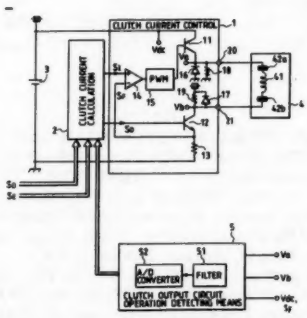
Fumihiko Nishiwaki, and Munehiko Mimura, both of Hyogo, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Jun. 15, 1990, Ser. No. 538,618
Claims priority, application Japan, Jun. 27, 1989, 1-164727; Jun. 27, 1989, 1-164728
Int. Cl.[5] B60K *41/18*
U.S. Cl. 364—424.1 **2 Claims**

1. A temperature detection device for an electromagnetic clutch of a vehicle comprising:

clutch output circuit operation detection means for detecting a current feedback signal corresponding to an electromagnetic clutch output terminal voltage and a clutch current of said electromagnetic clutch,

clutch current calculation means, responsive to running control information and engine control information, for providing a clutch current instruction signal and a clutch open signal, said clutch current calculating means comprising means, responsive to the clutch output terminal voltage fed back from said clutch output circuit operation detection means, for calculating a clutch voltage from a



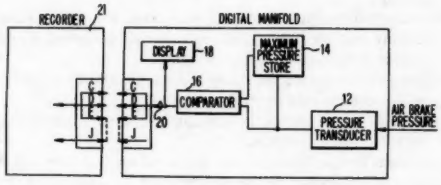
voltage drop in a wiring and a feeding mechanism of said electromagnetic clutch, and said clutch current calculating means further comprising means, responsive to said clutch voltage and clutch current corresponding to said current feedback signal, for calculating a clutch resistance to thereby calculate a clutch temperature and said clutch current instruction signal, and

clutch current control means, responsive to a deviation between the clutch current instruction signal and the current feedback signal, and said clutch open signal, for controlling the clutch current.

5,083,274
RAILROAD BRAKE PRESSURE RECORDING

Angel P. Bezos, Rockville, Md., and Emilio A. Fernandez, McLean, Va., assignors to Pulse Electronics, Inc., Rockville, Md.

Filed Feb. 28, 1990, Ser. No. 486,137
Int. Cl.[5] B61L *3/00*
U.S. Cl. 364—424.04 **3 Claims**



1. A recorder having a data storage unit for storing data from analogue and digital railroad air brake manifolds, comprising:

a connector for connecting said recorder to analogue and digital railroad air brake manifolds, said connector having a plurality of electrical input contacts, three of said input contacts positioned to mate with air brake pressure data output contacts of a digital air brake manifold and one of said input contacts positioned to mate with an air brake pressure data output contact of an analogue air brake manifold;

signal frequency responsive means connected to said one

input contact positioned to mate with said analogue manifold brake pressure output contact, said signal frequency responsive means producing a first characteristic output in response to a signal above a predetermined minimum frequency and a second characteristic output in response to a signal below said minimum frequency;

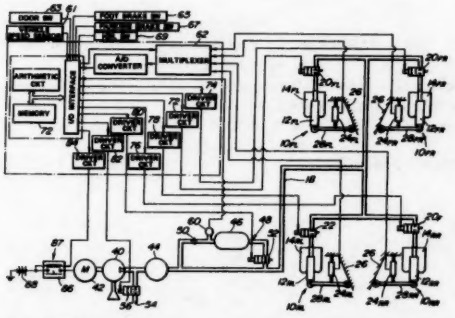
means responsive to said first characteristic output to process input data from said one input contact as air brake pressure data, and responsive to said second characteristic output to process input data from said three input contacts as said air brake pressure data.

5,083,275

HEIGHT CONTROL SYSTEM FOR AUTOMOTIVE SUSPENSION SYSTEM WITH VEHICLE DRIVING CONDITION DEPENDENT VARIABLE TARGET HEIGHT

Kenji Kawagoe; Hideo Ito, and Masatsugu Yokote, all of Kanagawa, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 8, 1988, Ser. No. 179,314
Int. Cl.[5] B60G *21/06*
U.S. Cl. 364—424.05 **50 Claims**



1. A height control system for a suspension control system for a vehicle, comprising:

a suspension system disposed between the body of the said vehicle and a suspension member rotably supporting a road wheel, said suspension system including means for varying a suspension force to be exerted between said body of said vehicle and said suspension member;

a first sensor for monitoring a height of said vehicle and for producing a height indicative first sensor signal;

a second sensor for monitoring a driving condition of said vehicle and for producing a driving condition indicative second sensor signal, said second sensor sensing a substantially stopped condition of said vehicle for producing said second sensor signal indicating thereof; and

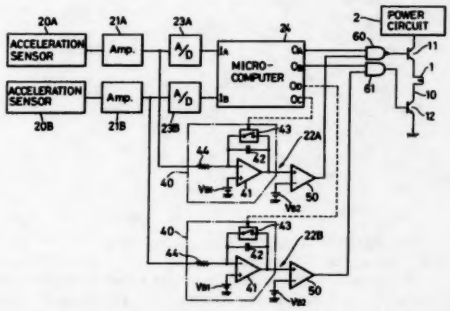
controlling means for receiving said first sensor signal and for comparing said first sensor signal with a predetermined first target height range for deriving a first control signal to operate said means for varying to adjust said suspension force for maintaining said height of said vehicle as represented by said first sensor signal within said predetermined first target height range while said second sensor signal is absent and for comparing said first sensor signal with a predetermined second target height range for deriving a second control signal to operate said means for varying to adjust said suspension force for maintaining said vehicular height as represented by said first sensor signal within said predetermined second target height range while said second sensor signal is present.

5,083,276

SYSTEM FOR CONTROLLING SAFETY DEVICE FOR VEHICLE

Masami Okano; Kunihiro Takeuchi, and Hideki Ishizuka, all of Higashimatsuyama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Aug. 28, 1990, Ser. No. 573,818
Claims priority, application Japan, Sep. 6, 1989, 1-103931[U]
Int. Cl.[5] B60R *21/32*
U.S. Cl. 364—424.05 **8 Claims**



1. A system for controlling a safety device for a vehicle, comprising:

(a) first and second switching means connected to a power source in serial relation to said safety device;

(b) first and second acceleration sensors for respectively producing analog deceleration signals representative of the deceleration of said vehicle;

(c) first and second analog processing circuits for respectively processing said deceleration signals fed respectively from said first and second acceleration sensors, each of said analog processing circuits including an integrating circuit for integrating a respective one of said deceleration signals, and a comparator circuit for comparing an integral value, outputted from said integrating circuit, with a first reference level and for outputting a first collision decision signal when said integral value exceeds said first reference value;

(d) first and second analog-to-digital converters for respectively converting said analog deceleration signals, fed respectively from said first and second acceleration sensors, into digital form;

(e) microcomputer means for performing calculations of integration of the deceleration respectively in accordance with said digitalized deceleration signals, fed respectively from said first and second digital-to-analog converters, to produce integral values, said microcomputer means comparing said integral values with a second reference level, and outputting second collision decision signals respectively from its first and second output ports when said integral values exceed said second reference level;

(f) first logic means for outputting a first instruction signal to turn on said first switching means when said first logic means simultaneously receives any one of said two first collision decision signals from said two analog processing circuits and one of said second collision decision signals from said first and second output ports of said microcomputer means; and

(g) second logic means for outputting a second instruction signal to turn on said second switching means when said second logic means simultaneously receives the other one out of said two first collision decision signals and the other one of said two second collision decision signals.

5,083,277

FUEL CONTROL SYSTEM

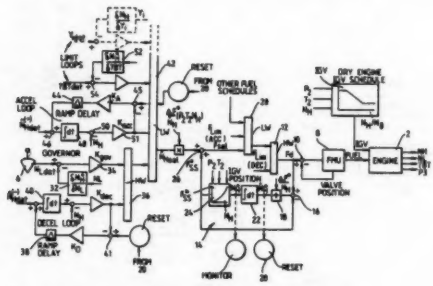
Arthur G. Shutler, Bristol, England, assignor to Rolls-Royce plc, England

Filed Jan. 9, 1989, Ser. No. 294,755

Claims priority, application United Kingdom, Jan. 15, 1988, 8800904

Int. Cl.[5] F02C 9/28; G05D 7/06

U.S. Cl. 364—431.02 10 Claims



1. An engine fuel control system comprising:

a fuel flow metering valve arranged to control fuel flow to the engine in response to an aggregate fuel demand signal;

means for generating the aggregate fuel demand signal which comprises means for summing a steady state fuel requirement signal and an overfuelling demand signal;

engine model feedback loop means connected to receive the aggregate fuel demand signal and arranged to generate the steady state fuel requirement signal proportional to said aggregate fuel demand signal; and

means for generating the overfuelling demand signal in accordance with a pilots' thrust or speed demand signal.

5,083,278

KNOCKING DETECTION DEVICE FOR AN AUTOMOTIVE ENGINE

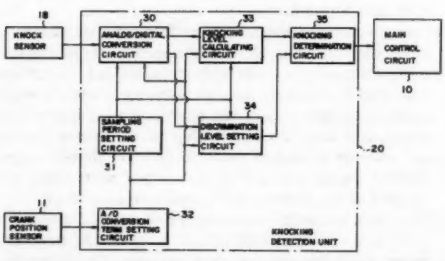
Takashi Matsuura, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1990, Ser. No. 507,497

Claims priority, application Japan, Apr. 14, 1989, 1-95688; Sep. 29, 1989, 1-256309

Int. Cl.[5] F02P 5/14

U.S. Cl. 364—431.08 8 Claims



1. A knocking detection device for an automotive engine adapted for receiving a signal from a knock sensor for detecting analog vibration waveforms due to knocking in said engine;

and further adapted to receive a signal from a crank position sensor for producing a crank position signal at a predetermined crank angle of said engine;

said device comprising conversion term setting means responsive to said crank position signal for setting in one cycle of said engine, a first conversion term in which knocking never occurs and a second conversion term in which knocking may occur;

sampling period setting means for setting a first sampling period and a second sampling period for the analog/digital conversion of said analog vibration waveforms in said first conversion term and said second conversion term, respectively, at least said second sampling being set so as to precisely digitize said vibration waveforms;

conversion means for converting said vibration waveforms sampled every first sampling period set by said sampling period setting means into digital data during said first conversion term and for converting said vibration waveforms sampled every second sampling period set by said sampling period setting means into digital data during said second conversion term;

discrimination level setting means for setting, after said first conversion term is terminated, a discrimination level to be used for determining the occurrence of knocking, on the basis of an average value of said digital data digitized in said first converting term;

knocking level calculating means for calculating, after said second conversion term is terminated, a knocking level of said engine on the basis of an average value of said digital data converted during said second conversion term; and

determination means for determining the occurrence of knocking by comparing said knocking level with said discrimination level.

5,083,279

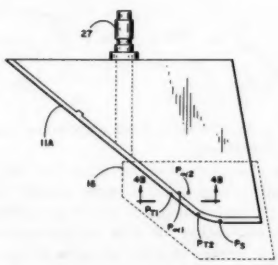
CANARD BASED HIGH ANGLE OF ATTACK AIR DATA SENSOR

Robert B. Burdoin, Albuquerque, N. Mex., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed May 9, 1990, Ser. No. 521,018

Int. Cl.[5] G06F 15/50

U.S. Cl. 364—435 13 Claims



1. A canard based high angle of attack air data sensor apparatus for an aircraft having a canard, wherein the canard includes a shaft, a leading edge, a side surface, a bottom surface and a top surface, comprising:

(a) means for sensing pressure including a plurality of flush orifice pressure sensors mounted on the canard wherein the pressure sensors further include a first configuration of pressure sensors flush mounted on the side surface, a second configuration of pressure sensors flush mounted on the bottom surface, a third configuration of pressure sensors flush mounted on the top surface, and a fourth configuration of pressure sensors flush mounted on the leading edge, and wherein each pressure sensor provides an output signal;

(b) a shaft encoder mounted on the canard shaft which provides a measurement signal proportional to the displacement angle of the canard; and

(c) means for processing coupled to the means for sensing pressure and the shaft encoder, where the means for processing determines an angle of attack of the aircraft as a function of the output signals of the second, third, and

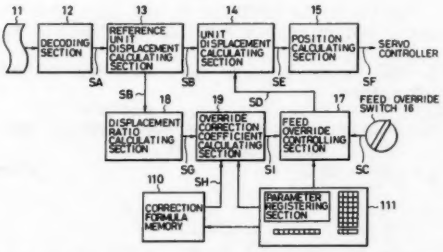
fourth configuration of pressure sensors and the measurement signal.

5,083,280

METHOD FOR CORRECTING TOOL FEED RATE IN NUMERICAL CONTROL SYSTEM AND APPARATUS THEREFOR

Kyoichi Yamamoto, and Takao Hasebe, both of Ooguchi, Japan, assignors to Kabushiki Kaisha Okuma Tekkosho, Aichi, Japan

Filed Jan. 26, 1990, Ser. No. 471,958
Claims priority, application Japan, Jan. 26, 1989, 1-17258
Int. Cl.[5] G05B *19/18, 13/00*
U.S. Cl. 364—474.3 4 Claims



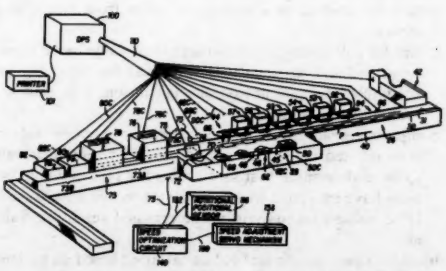
1. A tool feed rate correcting method for numerical control system by calculating a unit displacement from a reference unit displacement which in turn is calculated from a tool feed information on the machining program and from a feed override value which has been separately input and by controlling the speed of the tool movement toward the target position in accordance with said calculated unit displacement, the method being characterized in that the ratio of a first displacement component in a first direction based on said reference unit displacement to a second displacement component in a second direction based on said reference unit displacement is calculated, and the ratio thus calculated is substituted in a feed override correction formula which is stored in advance to obtain an override correction coefficient, to thereby correct said feed override value.

5,083,281

INSERTION MACHINE WITH SPEED OPTIMIZATION

K. George Rabindran, Morton Grove; David Filicicchia, Schaumburg, and Kenneth L. Guenther, Park Ridge, all of Ill., assignors to Bell & Howell Phillipsburg Co., Allentown, Pa.

Continuation of Ser. No. 350,856, May 12, 1989, Pat. No. 4,987,547. This application Jan. 22, 1991, Ser. No. 643,268
The portion of the term of this patent subsequent to Jan. 22, 2008, has been disclaimed.
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—478 7 Claims



1. A method of operating a machine of the type which performs functions in accordance with a machine cycle, said method comprising the steps of:

(a) commencing operation of said machine whereby said machine repeatedly performs a processing event;

(b) establishing a time interval whereby, for each of a plurality of successive such time intervals, the performance of said machine can be evaluated;

(c) establishing a weighing factor for weighting information obtained with respect to said most recent interval relative to information accumulatively averaged over preceding time intervals;

(d) determining an actual machine cycle speed;

(e) determining, for a most recent time interval, an indication of the number of repetitions of said processing event said machine can be expected to successfully perform during a unit of time;

(f) developing a new forecast of the projected number of sets of repetitions of said processing event said machine is expected to successfully perform during said unit of time by averaging said indication determined in step (e) with a previous forecast, said previous forecast being either:

(i) an accumulatively averaged number of the number of successful repetitions of said processing event performed for a unit of time during previous intervals; or,

(ii) upon commencement of said machine, a predetermined default value;

(g) determining a percentage productivity index by dividing said new forecast by said actual machine cycle speed;

(h) representing said actual machine cycle speed as a percentage value indicative of a maximum rated machine cycle speed; and,

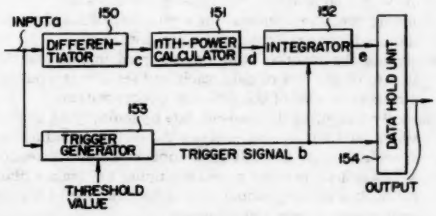
(i) comparing said percentage productivity index obtained in step (g) with the percentage obtained in step (h) to determine whether the actual machine cycling speed should be changed to result in a greater actual number of successful repetitions of said processing event.

5,083,282

TRANSITION STATE DETECTING DEVICE AND MEASURING DEVICE USING THE SAME

Aiichi Katayama, Isehara; Kenji Nakatsugawa, Kanagawa; Hitoshi Sekiya, and Takafumi Nakamura, both of Atsugi, all of Japan, assignors to Anritsu Corporation, Tokyo, Japan

PCT No. PCT/JP89/00340, § 371 Date Nov. 27, 1989, § 102(e) Date Nov. 27, 1989, PCT Pub. No. WO89/09412, PCT Pub. Date Oct. 5, 1989
PCT Filed Mar. 31, 1989, Ser. No. 445,846
Claims priority, application Japan, Mar. 31, 1988, 63-76381; Mar. 31, 1988, 63-76382
Int. Cl.[5] G06G *7/00*
U.S. Cl. 364—487 12 Claims



10. A measuring device comprising:

receiving means for receiving an output signal output from an object to be measured, the output signal transiting across a predetermined threshold value;

converting means for frequency-converting the output signal received by said receiving means and for outputting a conversion signal;

first detecting means for frequency-discriminating the con-

version signal output from said converting means and for outputting a first detection signal;

differentiating means for differentiating the first detection signal output from said first detecting means and for outputting a differential signal representing a transition state of the output signal;

second detecting means for detecting that the output signal output from said receiving means reaches the threshold value;

integrating means for integrating the differential signal output from said differentiating means within a predetermined period of time after the output signal which transits across the threshold value is detected by said second detecting means, and for outputting a parameter corresponding to the transition state of the output signal;

display means for displaying the parameter output from said integrating means; and

nth-power calculating means for raising the differential signal to the nth power.

5,083,283

METHOD OF DETERMINING CALIBRATION CURVE AND APPARATUS USING CALIBARATION CURVE

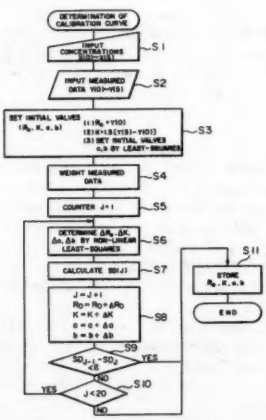
Kyoko Imai, Katsuta; Yasushi Nomura, Mito, and Hiroshi Umetsu, Katsuta, all of Japan, assignors to Hitachi, Ltd., Toyko, Japan

Filed Mar. 14, 1989, Ser. No. 323,490

Claims priority, application Japan, Mar. 18, 1988, 63-63192

Int. Cl.[5] G01N *31/00*

U.S. Cl. 364—497 **4 Claims**



2. A method of analyzing including determining a calibration curve for an analyzer, comprising the steps of:

sampling reaction solutions for a plurality of standard substances having different concentrations;

analyzing the reaction solutions sampled in said sampling step to obtain sets of data, each said set corresponding to a respective one of the different concentrations;

partially weighting the analysis data by multiplying at least a single said set of the analysis data corresponding to a specific one of the different concentrations of reaction solutions by a predetermined multiplier to obtain a plurality of data corresponding to said specific one of the concentrations of reaction solutions;

storing said sets of data and said plurality of data corresponding to said specific one of the concentrations of reaction solutions together;

processing said stored data by means of a least-squares method and thereafter generating a calibration curve from said processed data; and

sampling and analyzing the reaction solutions of said standard substances having an unknown concentration and determining the unknown concentration based upon said calibration curve.

5,083,284

APPARATUS FOR PREDICTING THE LIFETIME OF CABLE FOR MOVABLE PORTION OF INDUSTRIAL ROBOT

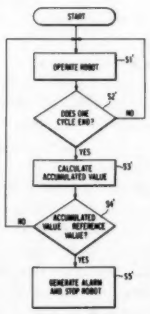
Hisao Kato, Inazawa, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed Jan. 19, 1990, Ser. No. 467,428

Claims priority, application Japan, Jan. 24, 1989, 1-14813

Int. Cl.[5] G06F *15/46, 15/20*

U.S. Cl. 364—508 **3 Claims**



1. An industrial robot having means for determining the lifetime of cables for movable portions of said industrial robot, comprising:

means for positioning and stopping an arm of said industrial robot;

means for detecting that said arm is in a stopped position;

storage means for storing a plurality of predetermined values corresponding to an amount of bending and torsion of said cables for said movable portions, said predetermined values being determined for each of a plurality of regions defined by dividing an operation region of said arm in which said cables for said movable portions are arranged into a plurality of sections;

means for reading out one of said predetermined values which corresponds to the position of said arm from said storage means whenever said arm is stopped;

means for reading an accumulated value from said storage means;

means for calculating a new accumulated value based on said value and said accumulated value and for replacing said accumulated value in said storage means with said new accumulated value;

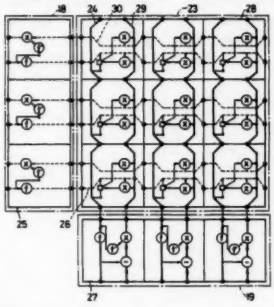
comparing means for making comparisons between said new accumulated value and a predetermined reference value so as to determine that said cables for said movable portions have exceeded their lifetime when said new accumulated value exceeds said predetermined reference value; and

means for controlling said industrial robot based on said new accumulated value.

5,083,285
MATRIX-STRUCTURED NEURAL NETWORK WITH LEARNING CIRCUITRY

Takeshi Shima, Sagamihara, and Yukio Kamatani, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 11, 1989, Ser. No. 419,768
Claims priority, application Japan, Oct. 11, 1988, 63-255485; Oct. 24, 1988, 63-267848; Nov. 15, 1988, 63-286693
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—24 **20 Claims**



1. A multi-layer perceptron circuit device with a learning function, comprising:

(a) at least one tilting synapse block including

(i) a plurality of synapses for performing a weight calculation on synapse input signals to obtain synapse output signals;

(ii) synapse input signal lines for transmitting the synapse input signals to the synapses;

(iii) synapse output signal lines for transmitting the synapse output signals from the synapses;

(iv) synapse error signal input lines for transmitting synapse error input signals to the synapses;

(v) learning means for updating values of weights utilized in weight calculations by a product of synapse error input signals and the synapse input signals;

(vi) synapse error signal output lines for transmitting synapse error output signals from the synapses; and

(vii) means for calculating the synapse error output signals as a product of the synapse error input signals and the weights;

(b) at least one tiling input neuron block containing a plurality of neurons, each neuron of the at least one tiling input neuron block being connected with one of the synapse input signal lines by its signal output, inputting one of a plurality of perceptron input signals by its signal input, and supplying one of the synapse input signals to one of the synapse input signal lines, each neuron of the tiling input neuron blocks being connected to one of the synapse error signal output lines by its error signal input, receiving one of the synapse error output signals from one of the synapse error signal output lines, and outputting one of a plurality of perceptron error signals by its error signal output, wherein each of the neurons of the tiling input neuron blocks further includes

(i) differential function converter means for converting one of the perceptron input signals into a converted signal using a nonlinear function, the differential function converter means including

first and second transistors, each having a first, second, and third terminal, the first terminals connected to a first voltage source, and their second terminals connected together to form a first output terminal, the first transistor receiving an externally supplied first input signal representing a function at its third terminal and the second transistor receiving an externally supplied second input signal representing a complement of the function such that an output signal at the first output terminal represents a derivative of the function;

load means connected between the first output terminal and a second voltage source for loading the first output terminal;

reference voltage generator means connected between the first voltage source and the second voltage source for generating a DC offset voltage; and

a second output terminal connected to the reference voltage generator means; and

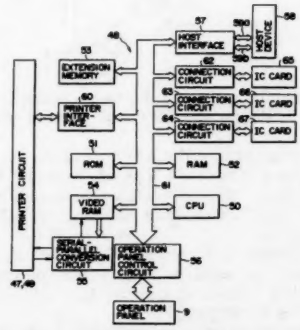
(ii) means for obtaining one of the perceptron error signals from one of the synapse error output signals transmitted through one of the synapse error signal output lines and the converted signal obtained by the differential function converter means; and

(c) at least one tiling output neuron block containing a plurality of neurons, each neuron of the tiling output neuron blocks being connected with one of the synapse output signal lines by its signal input, and receiving one of the synapse output signals from one of the synapse output signal lines, and outputting a perceptron output signal by its signal output, each neuron of the tiling output neuron blocks being connected to one of the synapse error signal input lines by its error signal output, inputting an externally supplied teacher signal by its error signal input, and supplying one of the synapse error input signals to one of the synapse error signal input lines.

5,083,286
IMAGE FORMING APPARATUS RECEIVING EXTERNAL DATA TO PERFORM A PREDETERMINED PROCESS

Rika Hino, Tokyo, and Kimio Osawa, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 27, 1989, Ser. No. 413,303
Claims priority, application Japan, Sep. 30, 1988, 63-245999
Int. Cl.[5] G06K *19/00*
U.S. Cl. 395—115 **8 Claims**



1. An image forming apparatus initialized by down-loading predetermined initialization data from a host device to a load memory means for storing the predetermined data, comprising:

first loading means for loading said predetermined initialization data to said load memory means from said host device;

first instruction means for giving an instruction to write the predetermined initialization data stored in said load memory means into a memory medium from said load memory means;

second loading means for loading the predetermined initialization data stored in said memory medium to said load memory means from said memory medium; and

memory control means for writing into said memory medium said predetermined initialization data loaded to said

load memory means from said host device by said first loading means when instructed by said first instruction means, and loading said predetermined initialization data stored in said memory medium to said load memory means when said memory medium having said predetermined initialization data loaded into is set in said apparatus, thereby executing initialization of said image forming apparatus, wherein

said memory control means includes first means for detecting whether said memory medium is blank or not when the predetermined initialization data is being written into said memory medium and second means for detecting whether rewriting of said memory medium is permissible when it is detected by the first means that the memory medium is not blank.

5,083,287

METHOD AND APPARATUS FOR APPLYING A SHADOWING OPERATION TO FIGURES TO BE DRAWN FOR DISPLAYING ON CRT-DISPLAY

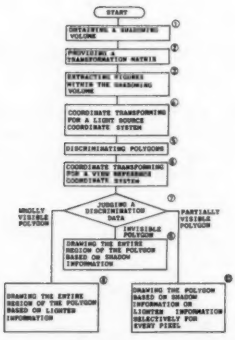
Koei Obata, and Takashige Kai, both of Kusatsu, Japan, assignors to Daikin Industries, Inc., Osaka, Japan

Filed Jul. 14, 1989, Ser. No. 379,941

Claims priority, application Japan, Jul. 14, 1988, 63-175778; Apr. 17, 1989, 64-97239

Int. Cl.[5] G09B *9/08*

U.S. Cl. 395—126 **20 Claims**


START
OBTAINING A SHADOWING VOLUME
PROVIDING A TRANSFORMATION MATRIX
EXTRACTING FIGURES WITHIN THE SHADOWING VOLUME
COORDINATE TRANSFORMING FOR A LIGHT SOURCE COORDINATE SYSTEM
DISCRIMINATING POLYGONS
COORDINATE TRANSFORMING FOR A VIEW REFERENCE COORDINATE SYSTEM
JUDGING A DISCRIMINATION DATA
WHOLLY VISIBLE POLYGON
PARTIALLY VISIBLE POLYGON
INVISIBLE POLYGON
DRAWING THE ENTIRE REGION OF THE POLYGON BASED ON SHADOW INFORMATION
DRAWING THE ENTIRE REGION OF THE POLYGON BASED ON LIGHTEN INFORMATION
DRAWING THE POLYGON BASED ON SHADOW INFORMATION OR LIGHTEN INFORMATION SELECTIVELY FOR EVERY PIXEL

1. A method for applying a shadowing operation to figures to be drawn for display on a CRT-display, comprising the steps of:

(a) extracting figures within a volume to be shadowed from every figure to be drawn to obtain extracted figures, said volume to be shadowed being a volume including desired figures for which shadows may be projected in a view volume,

(b) transforming said extracted figures to figures having individual data defined in a light source coordinate system in which a direction of radiation from a light source defines a depth direction,

(c) judging for every pixel of said transformed figures whether each pixel is before or behind other pixels in said depth direction, and obtaining existence information relating to which pixels are nearest said light source in each figure based on said judgement results,

(d) judging for each figure whether all pixels of said figure are nearest said light source, or only some pixels are nearest said light source, or no pixel is nearest said light source, based on said existence information obtained in step (c), and

(e) drawing said figures having individual data defined in a view reference coordinate system in which a direction of view is a depth direction,

wherein according to said result of judgement in step (d), (i) figures having some pixels which exist nearest said light source, are drawn for every pixel based on shadow information or lighten information selected with reference to said existence information obtained in step (c), (ii) figures having no pixel which exists nearest said light source are drawn entirely based on shadow information, and (iii) figures having all pixels existing nearest said light source are drawn entirely based on lighten information.

5,083,288

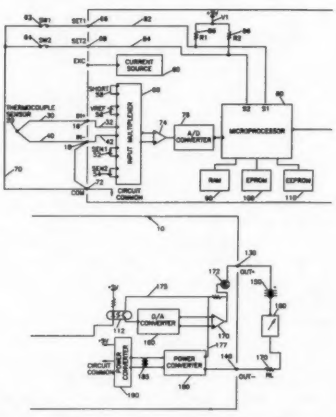
APPARATUS FOR CONFIGURING A REMOTE PROCESS SENSOR AND SIGNAL TRANSMITTER

Arpad Somlyody, 14 Saxon La., Shrewsbury, 01545, and Paul C. Neilson, 1312 Salem St., North Andover, Mass. 01845

Continuation of Ser. No. 315,305, Feb. 24, 1989, abandoned. This application Dec. 24, 1990, Ser. No. 630,803

Int. Cl.[5] G06F *15/00*

U.S. Cl. 364—550 **5 Claims**



1. A remote signal sensor and transmitter and means for configuring parameters therein comprising

a multiplexer circuit having a plurality of input terminals and an output terminal,

a remote sensor connected to selected input terminals of said multiplexer,

an analog-to-digital (A/D) converter having an input and an output, the input being connected to the output of said multiplexer,

a microprocessor having first second and third input terminals, and an output terminal,

the output of said A/D converter being connected to said third input terminal of said microprocessor,

said microprocessor having an associated random access memory (RAM) for temporary storage of data, an electrically programmable read only memory (EPROM) for storing a program and an electrically erasable read only memory (EEPROM) for the storage of data used for configuring parameters in said signal sensor and transmitter,

a source of potential connectable by an operator by a first lead to said first input terminal on said microprocessor to provide said potential on said first terminal,

said source of potential connectable by said operator by a second lead to said second input terminal on said microprocessor to provide said potential on said second terminal,

said first and second leads connected through identical resistors to a positive power supply which is normally applied to said first and second terminals on said microprocessor,

said microprocessor having said output terminal connected to a load circuit having output terminals,

output load terminals connected to said load circuit,

a circuit connected across said output load terminals includ-

ing a low voltage positive power supply in series with an ammeter, and

a software program in said EPROM circuit including (1) a first series of steps each related to a specific portion of said sensor and transmitter and (2) a second series of steps each representing a parameter related to a step in said first series, said microprocessor sequencing through said first series of steps of said software program as said potential is applied to said first terminal of said microprocessor and then to an associated step in said second series of steps as said potential is applied to said second terminal of said microprocessor,

each transition of said microprocessor to a step in said first series of steps selecting a portion of said signal sensor and transmitter to be configured and each transition of said microprocessor to the associated step in said second series of steps configuring in said sensor and transmitter a specific parameter related to said selected portion of said sensor and transmitter,

the value of each configured parameter selected from a step in said second series of steps being stored in said EEPROM and thus comprising a parameter configured in said signal sensor and transmitter.

5,083,289

OPTICAL CALORIMETER SYSTEM FOR EXECUTING REAL AND SHORT TIME CALORIMETRIC MEASUREMENT OF THE OPTICAL POWER

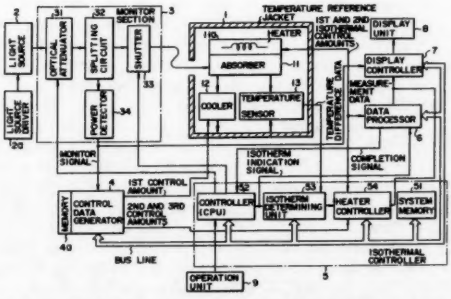
Kenji Kuroda, Hadano, and Koki Sasaki, Atsugi, both of Japan, assignors to Anritsu Corporation, Tokyo, Japan

Filed Jan. 29, 1990, Ser. No. 471,839

Claims priority, application Japan, Jan. 31, 1989, 1-19807

Int. Cl.[5] G01K *17/08*; G06F *15/20*

U.S. Cl. 364—557 **10 Claims**



1. A method for measuring optical power using an optical calorimeter which has a temperature reference jacket including an optical absorber for absorbing optical power to be measured and generating heat, an electronic cooler and an electric heater thermally connected to said optical absorber, and a temperature sensor for detecting a temperature difference between said temperature reference jacket and said optical absorber, the method comprising:

storing in advance first, second, and third control amounts corresponding to an optical power to be measured, the first and second control amounts being stored as a cooler power for said electronic cooler and a heater power for said electric heater sufficient to control said optical calorimeter in a substantially isothermal state between optical absorber and said temperature reference jacket, and the third control amount being stored as a heater power for said electric heater corresponding to the optical power to be measured;

monitoring the optical power to be measured while the optical power to be measured is transmitted to or shielded from said optical absorber of said optical calorimeter;

first controlling said optical calorimeter in the substantially isothermal state by reading out the first and second control amounts and supplying the first and second control amounts at substantially the same time to said electronic cooler and to said electric heater, in accordance with the monitoring results of the optical power to be measured, and by finely adjusting the heater power in accordance with the temperature difference from said temperature sensor, while the optical power to be measured is shielded from said optical absorber of said optical calorimeter;

first detecting a first isothermal control amount for the heater power obtained when the substantially isothermal state is achieved in said first controlling step;

second controlling said optical calorimeter in the substantially isothermal state by continuously supplying the first control amount to said electronic cooler, reading out the third control amount instead of the second control amount and supplying the third control amount to said electric heater, and by finely adjusting the heater power in accordance with the thermal difference from said temperature sensor, while the optical power to be measured is transmitted to said optical absorber of said optical calorimeter;

second detecting a second isothermal control amount for the heater power obtained when the substantially isothermal state is achieved in said second controlling step; and

calculating the optical power to be measured in accordance with the first and second isothermal control amounts for the heater power, detected in said first and second detecting steps.

5,083,290

LUNCH BOX TYPE ELECTRONIC APPARATUS

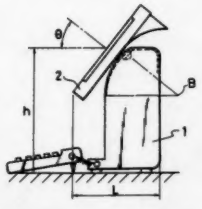
Takashi Hosoi, Oume, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 400,930, Aug. 31, 1989, abandoned. This application Jun. 20, 1991, Ser. No. 722,401

Claims priority, application Japan, Aug. 31, 1988, 63-113331[U]

Int. Cl.[5] G06F *1/00*

U.S. Cl. 364—708 **11 Claims**



1. An electronic apparatus, comprising:

a display unit having a display surface and a curved rear surface;

a body unit, electrically connected to the display unit, including a front surface having a curved portion conforming to the rear surface of said display unit for slidably supporting the display unit so as to change an angle and a height of the display surface; and

stopper means provided on the rear surface of said display unit and said curved portion of said body unit for maintaining the display surface in an arbitrary position on the curved portion.

5,083,291

TRANSCEIVING PROCESS FOR A DIGITAL TELEPHONE LINE

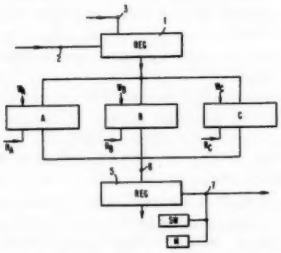
Claude Athenes, Paris; Jean-Louis Bernet, LaBuisse, and Jean-Bernard Saxod, Grenoble, all of France, assignors to SGS-Thomson Microelectronics S.A., Gentilly, France

Filed May 15, 1989, Ser. No. 351,224

Claims priority, application France, May 16, 1988, 88 06896

Int. Cl.[5] G06F *13/38*

U.S. Cl. 395—325 **5 Claims**



1. A process for converting a first flow of data words supplied at the rate of a first clock into a second flow of data words comprising, inside successive frames, a sequence of n data words from the first flow, the duration of each frame of the second flow being equal to the duration of the n data words in the first flow, said process comprising the steps of:

storing the successive data words of said first flow in an input register;

writing the contents of said input register into one of a plurality of intermediate registers when said input register is fully loaded with said data words,

sequentially reading said intermediate registers into an output register; and

skipping a reading of any of said intermediate registers if the contents thereof have been modified during a specified time period.

5,083,292

BIPOLAR RANDOM ACCESS MEMORY

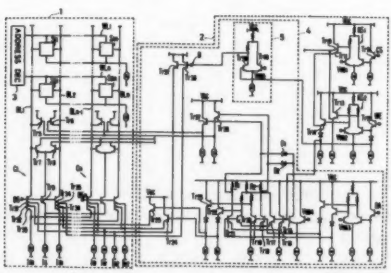
Katsuyuki Yamada, Kasugai; Teruaki Maeda, Seto, and Yoshichika Nakaya, Kasugai, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 9, 1990, Ser. No. 490,920

Claims priority, application Japan, Mar. 13, 1989, 1-60039

Int. Cl.[5] G11C *11/00*

U.S. Cl. 365—155 **10 Claims**



1. A bipolar random access memory comprising:

a plurality of memory cells arranged in a row and column formation, wherein said memory cells are arranged into a plurality of rows and a plurality of columns, each of said memory cells being capable of storing cell information selected from first cell information and second cell information and having a first side and a second side, opposite from the first side, wherein the first side assumes a first state and the second side assumes a second state, opposite from the first state, when the first cell information is stored in one of said memory cells, and wherein the first side assumes the second state and the second side assumes the first state when the second cell information is stored in one of said memory cells;

a plurality of word lines corresponding to respective rows of said memory cells such that, in each row of said memory cells, a word line is connected commonly to each of said memory cells in each row;

a plurality of bit lines corresponding to respective columns of said memory cells such that, in each column of said memory cells, a pair of adjacent bit lines are connected commonly to each of said memory cells in each column, one at the first side and another at the second side;

row addressing means connected to each of said plurality of word lines for selecting one of the word lines connected to one of the plurality of rows of said memory cells;

column addressing means connected to each pair of adjacent bit lines for selecting one of the pairs of adjacent bit lines;

each of said memory cells causing a current to flow from the word line connected thereto to one of the bit lines connected to one of the first and second side thereof which assumes the first state while not causing a current to flow from the word line connected thereto to another of the bit lines connected to the other side thereof which assumes the second state;

read/write control means for receiving and writing cell information into an addressed memory cell, which is a memory cell in a row selected by the row addressing means and in a column selected by the column addressing means, for outputting a read/write control signal to indicate whether the memory cells are to be operated in one of a reading mode and a writing mode, for supplying, when in the reading mode, a read current to the bit line connected to one of the first and second sides of the addressed memory cell which assumes the second state, and for supplying, when in the writing mode, a write current to the bit line connected to one of the first and second side of the addressed memory cell which has a state to be changed from the first state to the second state;

first current control means, connected to a first selected bit line connected commonly to an addressed memory cell in a column selected by the column addressing means at the first side of the memory cells, for decreasing the write current flowing through the first selected bit line when in the writing mode and when the state of the first side of the addressed memory cell is to be changed from the first state to the second state in response to writing of the cell information, and for increasing the write current flowing through the first selected bit line when in the writing mode and when the state of the first side of the addressed memory cell is to be changed from the second state to the first state;

second current control means, connected to a second selected bit line connected commonly to an addressed memory cell in a column selected by the column addressing means at the second side of the memory cells, for decreasing the write current flowing through the second selected bit line when in the writing mode and when the state of the second side of the addressed memory cell is to be changed from the first state to the second state in response to writing of the cell information, and for increasing the write current flowing through the second selected bit line when in the writing mode and when the state of the second side of the addressed memory cell is to be changed from the second state to the first state; and

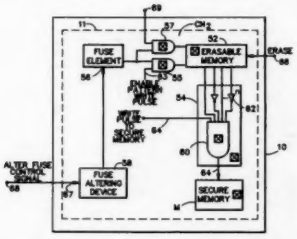
third current control means, connected to the first and second current control means, for receiving the cell information to be written and the write control signal and for selectively controlling the first and second current control means in response to the write control signal and the cell information.

5,083,293

PREVENTION OF ALTERATION OF DATA STORED IN SECURE INTEGRATED CIRCUIT CHIP MEMORY

Robert C. Gilberg, San Diego; Paul Moroney, Cardiff-By-The-Sea, and William A. Shumate, San Diego, all of Calif., assignors to General Instrument Corporation, New York, N.Y.

Filed Jan. 12, 1989, Ser. No. 297,137
Int. Cl.[5] G11C *7/00, 16/02, 13/00*
U.S. Cl. 365—189.01 **10 Claims**



4. An integrated circuit chip in which alteration of secure data stored in a predetermined location of a memory on the chip may be prevented, comprising

a memory for the storage of unalterable secure data;

a memory control logic circuit coupled to the memory for causing data to be stored in the memory;

a fuse element having an initial state and an irreversibly altered state;

means coupled to the fuse element for irreversibly altering the state of the fuse element in response to a predetermined control signal; and

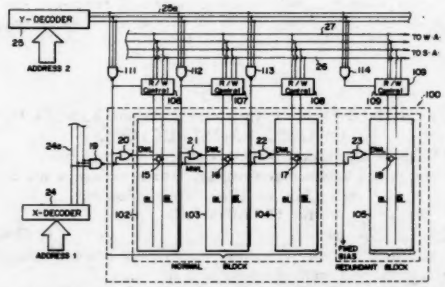
means coupled to the fuse element and the memory control circuit for monitoring the state of the fuse element and for preventing the memory control circuit from causing data to be stored in the memory after the state of the fuse element has been altered irreversibly.

5,083,294

SEMICONDUCTOR MEMORY DEVICE HAVING A REDUNDANCY

Yoshinori Okajima, Kanagawa, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 3, 1990, Ser. No. 562,512
Claims priority, application Japan, Aug. 4, 1989, 1-203001
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—200 **8 Claims**



1. A semiconductor memory device, comprising:

a plurality of main memory cell arrays wherein a number of memory cells for storing data are arranged in row and column formation in each of the main memory cell arrays;

a redundant memory cell array wherein a number of memory cells for storing data are arranged in row and column formation;

a plurality of first word lines provided in each of the plurality of main memory cell arrays so as to extend throughout the main memory cell arrays in correspondence to a group of memory cells aligned in the main memory cell arrays in a row direction;

a plurality of second word lines provided in the redundant memory cell array so as to extend throughout the redundant memory cell array in correspondence to a group of memory cells aligned in the redundant memory cell array in the row direction;

a plurality of first bit lines provided in each of the plurality of main memory cell arrays so as to extend throughout the main memory cell arrays in correspondence to a group of memory cells aligned in the main memory cell arrays in a column direction;

a plurality of second bit lines provided in the redundant memory cell array so as to extend throughout the redundant memory cell array in correspondence to a group of memory cells aligned in the redundant memory cell array in the column direction;

a plurality of common word lines extending throughout the plurality of main memory cell arrays and the redundant memory cell array, each of the common word line corresponding to one of the first word lines in each of the main memory cell arrays and one of the second word lines in the redundant memory cell array;

row addressing means supplied with first address data addressing a first group of memory cells aligned in the row direction in one of the main memory cell arrays, said row addressing means being connected to the plurality of common word lines for addressing one of the common word lines corresponding to the addressed first group of memory cells in response to the first address data supplied thereto by supplying a selection signal to the selected common word line;

a plurality of switching means provided in correspondence to the plurality of main memory cell arrays so as to be connected to the plurality of common word lines in each of the main memory cell arrays, said plurality of switching means being provided such that, in each of the main memory cell arrays, the switching means selectively connects one of the common word lines, on which the selection signal is supplied from the row addressing means, to a corresponding word line in response to a control signal addressing one of the main memory cell arrays for addressing the word line in the addressed main memory cell, said plurality of switching means being provided further in correspondence to the redundant memory cell array such that, in the redundant memory cell array, the switching means selectively connects the common word line, on which the selection signal is supplied from the row addressing means, to a corresponding word line of the redundant memory cell, thereby addressing the word line;

column addressing means supplied with second address data for addressing one of the main memory cell arrays and a second group of memory cells aligned in the column direction in the addressed main memory cell array, said column addressing means addressing the addressed main memory cell by producing a first control signal supplied to the switching means in response to the second address data supplied thereto and further addressing one of the bit lines corresponding to the addressed second group of memory cells in the addressed memory cell array by producing a second control signal in response to the second address data supplied thereto, said first address data and said second address data defining an addressed memory cell as a memory cell included commonly in the first group and second group of the memory cells, said column addressing means comprising first programmable means for selectively prohibiting the addressing of the main memory cell and the bit line therein by suppressing the second control signal when predetermined second address

data, addressing a bit line which is connected to a defective memory cell, is supplied to the column addressing means;

redundant column addressing means supplied with the second address data addressing one of the main memory cell and a second group of memory cells aligned in the column direction in the addressed main memory cell array, for addressing one of the bit lines in the redundant memory cell array in response to the second address data supplied thereto, said redundant column addressing means having second programmable means for enabling the addressing of the bit line in the redundant memory cell array only when predetermined second address data is supplied to the redundant column addressing means by producing a third control signal;

data reading means connected to the bit lines of the main memory cell arrays and the bit lines of the redundant memory cell array for reading data stored in the addressed memory cell in a main memory cell array in response to the second control signal supplied thereto from the column addressing means and for reading data stored in a redundant memory cell in the redundant memory cell array in response to the third control signal supplied thereto from the redundant column addressing means; and

data writing means connected to the bit lines of the main memory cell arrays and to the bit lines of the redundant memory cell array for writing data into the addressed memory cell in a main memory cell array in response to the second control signal supplied thereto from the column addressing means and for writing data in a redundant memory cell in the redundant memory cell array in response to the third control signal supplied thereto from the second programmable means of the redundant column addressing means.

5,083,295

INTEGRATED MEMORY CIRCUIT WITH INTERCONNECTED SENSE AMPLIFIERS

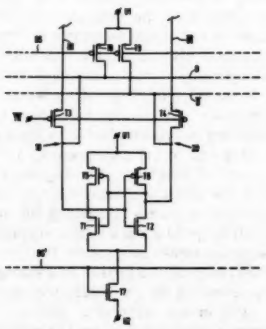
Judocus A. M. Lammerts; Willem G. J. Ritzerfeld, and Michael J. Tooher, all of Eindhoven, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Filed Nov. 30, 1989, Ser. No. 444,929

Claims priority, application Netherlands, Dec. 2, 1988, 8802973

Int. Cl.[5] G11C *7/00, 11/409*

U.S. Cl. 365—205 **7 Claims**



1. An integrated circuit with a memory, comprising a matrix of memory cells and sense amplifiers which are coupled thereto, outputs of said sense amplifiers being connected to one another and to a common data bus, activatable and deactivatable coupling means for coupling a single memory column to the input of each sense amplifier, the input of each sense amplifier being connected to its output, and activation means for simultaneously activating each sense amplifier.

5,083,296

SEMICONDUCTOR MEMORY WITH ALTERNATELY MULTIPLEXED ROW AND COLUMN ADDRESSING

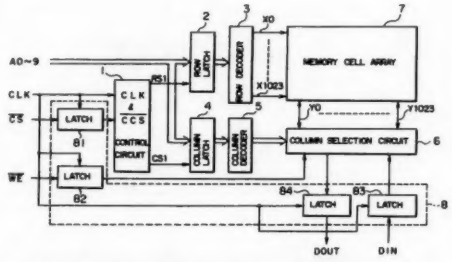
Kouji Hara, and Ryoichi Kurihara, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 16, 1990, Ser. No. 568,166

Claims priority, application Japan, Aug. 28, 1989, 1-221068

Int. Cl.[5] G11C *8/04*

U.S. Cl. 365—230.02 **25 Claims**



1. A semiconductor memory chip, comprising:

a memory cell array;

means of receiving an address signal having a row address signal and a column address signal in such a manner that the row address signal is received first and then the column address signal is subsequently received;

means of communication with the outside for inputting and outputting data to and from said memory cell array;

means for receiving a clock signal having a series of clock pulses;

means for receiving a chip select signal from the outside which represents that the semiconductor memory is selected;

means responsive to the clock signal and the chip select signal for generating a row address set signal and a column address set signal, wherein the row address set signal is generated under a circumstance where the semiconductor memory receives a firstly occurred clock pulse of the series of the clock pulses of the clock signal while the chip select signal is being provided to the semiconductor memory, and wherein the column address set signal is generated under a circumstance where the semiconductor memory receives a subsequent clock pulse while the chip select signal is being provided to the semiconductor memory;

means responsive to the row address set signal for setting the address signal from the means of receiving as the row address signal and for providing the memory cell array with the set row address signal; and

means responsive to the column address set signal for setting the address signal from the means of receiving as the column address signal and for providing the memory cell array with the set column address signal.

5,083,297

METHOD OF IMPROVING THE SEISMIC RESOLUTION OF GEOLOGIC STRUCTURES

William J. Ostrander, Benicia, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Jun. 26, 1990, Ser. No. 543,996

Int. Cl.[5] G01V *1/28, 1/30*

U.S. Cl. 367—36 **12 Claims**

1. A method of improving the seismic resolution of geologic structures, said method comprising the steps of:

(a) positioning acoustic wave receivers at locations so that they are at an offset distance from an acoustic wave source sufficient to receive refracted waves which have originated from a subsurface refractor of interest and which emerge from said refractor of interest at a critical angle;

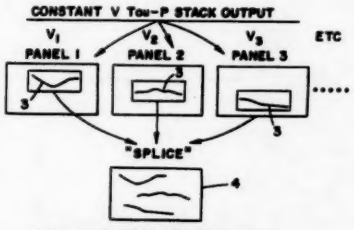
(b) generating acoustic waves into the subsurface from a

plurality of acoustic wave sources so that said acoustic waves encounter said subsurface refractor of interest;

(c) recording arriving representations of said acoustic waves generated from said sources, at said receiver locations;

(d) gathering refracted wave arrivals into common midpoint trace gathers;

(e) muting said arriving representations which originated at a point inside an estimated critical offset distance;



CUT AND SPLICE METHOD

(f) performing one tau-P sum of said refraction arrival data which originated beyond said critical offset distance and which are projected into zero source-to-receiver offset; and

(g) displaying said tau-P summed data as constant velocity stacks.

5,083,298

MONITORING APPARATUS

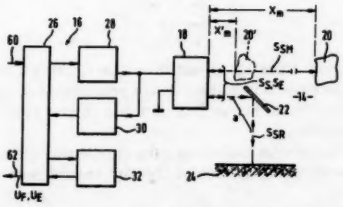
Giorgio Citterio, Horgen, and Werner Hartmeier, Effretikon, both of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Sep. 28, 1990, Ser. No. 590,310

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1989, 3932665

Int. Cl.[5] G01S *15/00*

U.S. Cl. 367—96 **11 Claims**



1. A monitoring apparatus for mounting on a movable machine part, said apparatus comprising

at least one electro-acoustic converter for transmitting a sonic signal into a monitored region and for receiving a reflected sonic signal from an object in said monitored region;

means for dividing said transmitted sonic signal into a sonic measurement signal directed into said monitored region and a sonic reference signal for direction onto a reference reflector having a predetermined distance from said convertor, said reference signal having a reference transit time dependent on said distance, said means being disposed to direct a reflected sonic reference signal from the reflector to said converter and a reflected measurement signal from an object to said converter; and

an electronic control unit connected to said converter for delivering a fault signal in response to a failure of said converter to receive a reflected sonic signal within said reference transit time and for delivering a recognition signal representative of an object in said monitored region in response to reception of a reflected measurement signal before expiration of said reference transmit time.

5,083,299

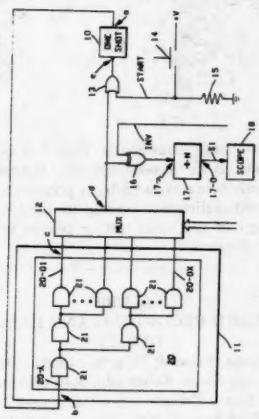
TESTER FOR MEASURING SIGNAL PROPAGATION DELAY THROUGH ELECTRONIC COMPONENTS

Robert E. Schwanke, Camarillo, and James C. Icuss, Escondido, both of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jul. 16, 1990, Ser. No. 572,281

Int. Cl.[5] G04F *8/00*; G01R *15/12*

U.S. Cl. 368—113 **11 Claims**



1. A tester, for precisely measuring the time with which a signal propagates through an integrated circuit chip, said tester being comprised of:

a pulse generator having a control terminal for receiving a control signal, and having an output terminal on which a pulse is generated in response to said control signal;

a feedback circuit which couples each pulse from said output terminal back to said control terminal; said feedback circuit together with said pulse generator forming a ring oscillator in which each pulse on said control terminal causes another pulse to be generated on said output terminal;

a fixture, within said feedback circuit, for holding said integrated circuit chip in a removable fashion such that pulses from said output terminal propagate through said fixture and said chip to said control terminal; and,

a timing circuit, coupled to said feedback circuit, for measuring the time interval between a multitude of said pulses from said feedback circuit with a certain tolerance that is larger than said integrated circuit chip, and for dividing the measured time interval by the number of pulses in said multitude.

5,083,300

SETTING MECHANISM FOR A TIMEPIECE

Herbert Schwartz, Wurmberg, Fed. Rep. of Germany, assignor to Timex Corporation, Middlebury, Conn.

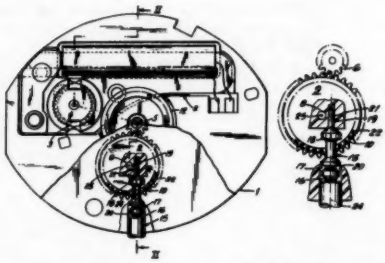
Filed Jul. 10, 1991, Ser. No. 727,706

Int. Cl.[5] G04B *18/00, 27/02*

U.S. Cl. 368—185 **7 Claims**

1. A setting mechanism for a timepiece having a frame and a gear train comprising a plurality of meshing gear members rotatably disposed in said frame, said setting mechanism comprising a setting stem rotatably mounted and axially slidable in said frame along a first axis, including a stem setting pinion thereon, detent means adapted to hold said setting stem in engaged and disengaged axial positions and a toothed wheel included among said meshing gear members of said gear train,

said toothed wheel being rotatably mounted in said frame about a second axis and having a plurality of crown teeth arranged to mesh with said stem setting pinion when the setting stem is in the engaged position, wherein the improvement comprises,



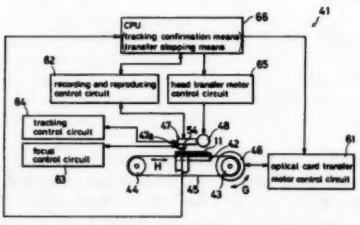
said first axis being arranged so that it is offset from said second axis to be non-intersecting therewith, and said crown teeth being skewed by a preselected angle away from the radial direction on said toothed wheel, whereby engagement of the stem setting pinion with the crown teeth is facilitated.

5,083,301

OPTICAL CARD RECORDING AND REPRODUCING DEVICE

Hirotsugu Matoba, Sakurai; Shigemi Maeda, Yamatokoriyama; Kenji Ohta, and Shozo Kobayashi, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 5, 1989, Ser. No. 347,712
Claims priority, application Japan, May 13, 1988, 63-117465
Int. Cl.[5] G11B *7/00;* **G06K** *13/00, 7/10;* **G01V** *5/00*
U.S. Cl. 369—32 **8 Claims**



1. An optical card recording and reproducing device comprising:

optical head means for emitting a light beam spot to an optical card while moving across said card at a desired speed, said card having at least two substantially parallel aligned data tracks wherein said data is recorded, each of said tracks sequentially including an acceleration sector for allowing the optical head means to accelerate to said desired speed prior to emitting said light, an address and track identification section for storing a track identifier, a data sector in which data is recorded and a deceleration sector for allowing the optical head means to decelerate after passing through said acceleration sector, address and track identification sector and data sector;

a transfer means for transferring said optical card and said optical head means along a selected one of said data tracks when recording or reproducing data from said tracks; and

a track number confirmation means for confirming the track identification recorded in said address and track identification sector located in the data track of said optical card; and

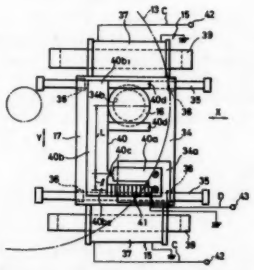
a transfer stopping means, responsive to said track confirmation means for stopping said transfer means after the light beam spot has passed through said address and track identification sector if it is determined that the track identification is not the appropriate track on which information is to be recorded or reproduced without proceeding to said data and deceleration sectors and causing said transfer means to move said optical head means and said light beam to an adjacent track.

5,083,302

OPTICAL TRACKING SERVO APPARATUS

Hiroshi Tsuyuguchi; Makoto Syoji, Akikawa, and Tsutomu Morita, Mitaka, all of Japan, assignors to Teac Corporation, Japan

Filed Sep. 21, 1988, Ser. No. 247,163
Claims priority, application Japan, Sep. 24, 1987, 62-239699
Int. Cl.[5] G11B *7/00;* **G02B** *26/08, 7/02*
U.S. Cl. 369—44.11 **6 Claims**



1. A servo tracking apparatus for performing a control so that a light beam is irradiated onto a predetermined track of an information recording surface of a disc shaped recording medium comprising:

an optical system for focusing the light beam on the information recording surface of the disc shaped recording medium;

tracking error detection means for detecting a tracking error of the light beam irradiated on said information recording surface with respect to the predetermined track by receiving a reflected light of the irradiated light beam which has been reflected from said information recording surface, and for outputting en error signal in accordance with said tracking error;

holding means for holding said optical system, said holding means having a lever mechanism and a portion forming a fulcrum for said lever mechanism, said lever mechanism having first and second lever arms extending away from said fulcrum, said first lever arm being coupled to said optical system; and

a piezoelectric device which is connected to said second lever arm of said lever mechanism, and which is deformed when supplied with the error signal so as to move said lever mechanism about said fulcrum, thereby to move said optical system so that the light beam is irradiated onto the predetermined track of said information recording surface.

5,083,303

SECTOR MARK DETECTING APPARATUS IN OPTICAL DISC APPARATUS

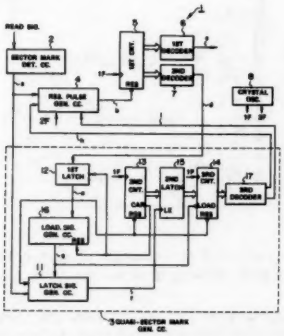
Tsuneo Yanagida, Nino; Motoo Azuma, Nagano, and Kenji Kikkawa, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1989, Ser. No. 343,654

Claims priority, application Japan, Apr. 28, 1988, 63-105975; Oct. 7, 1988, 63-253258

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—48 **17 Claims**



1. A sector mark detecting apparatus comprising:

a sector mark reading means for reading a sector mark signal which represents a sector mark area provided in a beginning part of a plurality of sectors formed by dividing each track of an optical disc;

an interval measuring means, connected to said sector mark reading means for measuring an interval of the sector mark signals;

a quasi-sector mark generating means, connected to said sector mark reading means and said interval measuring means, for generating a quasi-sector mark signal when said sector mark signal is anticipated to be detected in each sector based on a measured output of said interval measuring means;

a composite sector mark signal producing means for outputting a composite sector mark signal having a mis-reading of said sector mark signal compensated by said quasi-sector mark signal; and

a judging means for determining if the sector mark signal output from said sector mark reading means is mis-detected, said judging means has an address detecting means for detecting an address mark and determining if the sector mark signal is mis-detected by whether said address mark is detected.

5,083,304

AUTOMATIC GAIN CONTROL APPARATUS AND METHOD

Stephen V. Cahill, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 28, 1990, Ser. No. 589,946

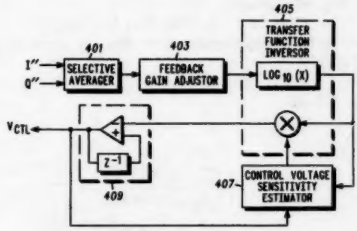
Int. Cl.[5] H04L *27/08*

U.S. Cl. 375—98 **34 Claims**

1. An automatic gain control apparatus including an adjustable gain amplifier, the adjustable gain amplifier having a received input signal, a control input signal, and an amplified output signal, the adjustable gain amplifier having a transfer function characteristic, with an associated inverse transfer function characteristic determining the amplified output signal responsive to the control input signal, the received input signal having time-varying energy levels, the automatic gain control apparatus comprising:

means, responsive to the inverse transfer function characteristic and the amplified output signal, for determining an energy level error correction signal;

means for determining a previous control input signal; and



means, responsive to said energy level error correction signal and said previous control input signal, for determining the control input signal.

5,083,305

RADIATION CONTROL DEVICE WITH VARIABLE ACTIVE SURFACE OF THE TYPE SENSITIVE TO IONIZING RADIATION

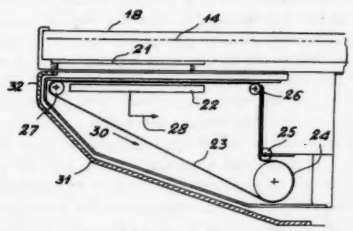
Marco Tirelli, Villebon sur Yvette; René Romeas, Palaiseau, and Yves Gregoire, Paris, all of France, assignors to General Electric CGR S.A., Issy les Moulineaux, France

Filed Apr. 26, 1990, Ser. No. 514,939

Claims priority, application France, Apr. 28, 1989, 89 05665

Int. Cl.[5] A61B *6/04*

U.S. Cl. 378—37 **5 Claims**



1. A device for the control of x-ray radiation exposure of a film sensitive to x-rays in a radiology system that comprises at least one source of X-radiation emitting a beam that irradiates an object to be examined, said film sensitive to x-rays placed beneath said object on which the latent image of the object is formed, and a detector of the X-radiation that has gone through the object to be examined, of the type having an ionization chamber, said chamber giving an electrical signal used to control the time of exposure of the object, said device further comprising a mask opaque to the X-radiation which is placed above the ionization chamber and below said object to be examined, said mask having at least one zone that is transparent to the X-radiation, the shape and the area of the transparent zone being adapted to the dimensions of the object to be observed and to the type of examination that is performed, wherein the mask is supported by a belt associated with a mechanism for the shifting of said belt so as to place said transparent zone in an optimal position with respect to said object.

5,083,306

APPARATUS FOR THE MULTI-LATERAL X-RAY TESTING OF AUTOMOTIVE TIRES

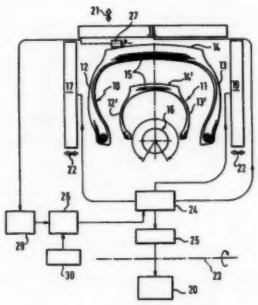
Horst Steffel, Gross Grönau, Fed. Rep. of Germany, assignor to Spezialmaschinenbau Steffel GmbH & Co. KG, Ratzeburg, Fed. Rep. of Germany

Filed Oct. 31, 1988, Ser. No. 265,072

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1987, 3737159

Int. Cl.[5] G01N *23/02*

U.S. Cl. 378—61 **13 Claims**



1. A testing device for multi-lateral X-ray testing of an automotive tire supported for rotation about an axis, comprising an omni-directional X-ray tube means for emitting radiation, the radiation penetrating a first and second side wall and a thread of the tire, receiving means located exterior of the side walls and the tread for receiving said radiation penetrating the tire, said receiving means being connected to optical indication means, said X-ray tube means being located in a space encircled by the tire adjacent an open inner side of the tire, said radiation emanating from said X-ray tube penetrating said side walls and said tread from the interior outwardly, said receiving means including a first and second linear diode line of light-sensitive diodes said first line aligned parallel to the axis of rotation of the tire and said second line aligned parallel to a diameter of the tire, scanning means connected to said diode lines for scanning the diodes with a predetermined scanning frequency and for transmitting an output signal of said diodes to a storage means, and image generating means having a plurality of picture elements for generating a scanning line per scanning sequence of said diode lines, and wherein the scanning frequency of said scanning means can be changes, wherein further a speed-sensing means is provided sensing a rotational speed of the tire, input means for generating a distance signal corresponding to the distance of the diode lines from the outer side of the tire, the scanning frequency being varied in response to the sensed rotational speed.

5,083,307

X-RAY RADIATOR

Fred Meinel, Eckental, and Richard Eichhorn, Altendorf, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 31, 1990, Ser. No. 607,467

Claims priority, application European Pat. Off., Nov. 9, 1989, 89120808.4

Int. Cl.[5] H01J *35/10*

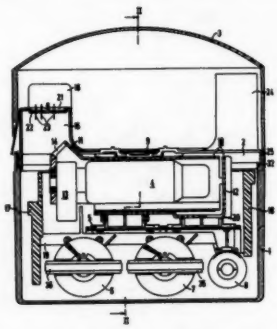
U.S. Cl. 378—200 **17 Claims**

1. An x-ray radiator comprising:

a tank and an insertable closure forming a housing filled with coolant;

an x-ray tube attached to said insertable closure and disposed in said housing, said x-ray tube having a cooling member in thermal communication with said x-ray tube for transferring heat generated during operation of said x-ray tube from said x-ray tube to said coolant;

a heat exchanger in thermal communication with said coolant and with an exterior of said housing for transferring heat from said coolant to said exterior, said heat exchanger being formed by a projection on said insertable closure



extending toward the exterior of said housing and disposed in said housing in proximity to said cooling member; and

guide means disposed in said housing for effecting circulation solely by convection of said coolant heated at said cooling member and cooled in said heat exchanger.

5,083,308

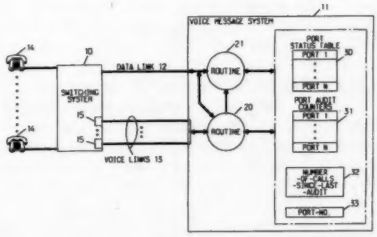
ARRANGEMENT FOR DETERMINING SWITCH PORT STATUS AT AN ADJUNCT PROCESSOR

David A. Gaulke, Westminster; Thomas M. O'Dell, Longmont, and Ricky L. Overmyer, Golden, all of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 30, 1990, Ser. No. 502,213

Int. Cl.[5] H04M *3/22*

U.S. Cl. 379—381 **30 Claims**



8. An arrangement for determining service status of individual ones of a plurality of communication ports wherein communications are received through in-service and idle ones of the ports on a rotating basis, comprising:

first means for indicating service states of individual ones of the ports, selectively responsive to receipt of a communication through one of the ports for indicating the one port to be in-service;

second means for indicating receipt of communications through individual ones of the ports, responsive to receipt of the communication through the one of the ports for indicating that the communication has been received through the one port;

third means cooperative with the first and the second means and responsive to receipt of at least N communications from the ports, where N is a number of the ports that are indicated by the first means to be in-service, for determin-

ing which ones of the ports are both (a) presently indicated by the first means to be in-service and idle and (b) not indicated by the second means to have had communications received therethrough; and

fourth means cooperative with the third means for treating as being out-of-service any port that has been determined by the third means to be both (a) and (b) a predetermined number of times.

5,083,309

METHOD AND A SYSTEM ENABLING SOFTWARE TO BE RUN SECURELY

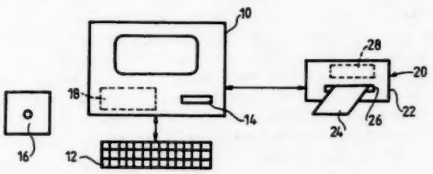
Daniel Beysson, Crespieres, France, assignor to Schlumberger Industries, Montrouge, France

Filed Nov. 16, 1990, Ser. No. 615,436

Claims priority, application France, Nov. 23, 1989, 89 15394

Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—4 **14 Claims**



1. A method of running software by means of a system comprising at least a main apparatus on which said software is run and an auxiliary device for receiving a removable data medium including at least a memory zone and suitable for interchanging information between said main apparatus and said memory zone, the method comprising the steps of:

defining in said software a certain number of commands requesting communication with said auxiliary device, said commands comprising first commands (C_n) associated with the generation of intermediate results for said software, and second commands (C_n) associated with requesting intermediate results in order to enable the program execution to continue;

on the appearance of each first command (C_n), writing one of said intermediate results in said memory zone; and

on the appearance of each second command (C_n) reading one of said intermediate results from said memory zone, thereby ensuring that the software cannot be executed in full unless said suitable removable medium is present in said auxiliary device.

5,083,310

COMPRESSION AND EXPANSION TECHNIQUE FOR DIGITAL AUDIO DATA

Eatamar Drory, Santa Clara, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Nov. 14, 1989, Ser. No. 436,547

Int. Cl.[5] G10L *3/00*

U.S. Cl. 381—30 **21 Claims**

1. An apparatus for compressing and expanding a digital audio signal, comprising:

predictor means for providing a first predicted signal of a first inputted digital audio signal;

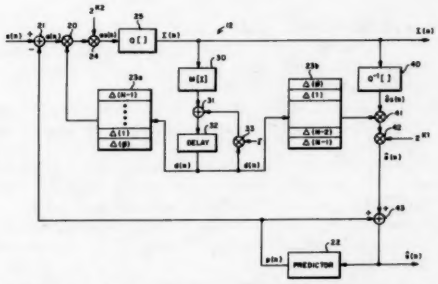
first adder means coupled to receive both said first inputted digital audio signal and said first predicted signal for providing a first difference signal, said first difference signal representing a difference between said first inputted digital audio signal and said first predicted signal;

first adjustment means coupled to receive said first difference signal for applying a first gain value to said first difference signal in order to adjust the magnitude of said first difference signal and for normalizing said first difference signal, said first adjustment means providing an output being a first adjusted difference signal and having at least one look-up table;

quantizer means coupled to said first adjustment means for quantizing said first adjusted difference signal in order to provide a compressed signal which corresponds to a quantized compression of said first inputted digital signal;

adaptive means coupled to receive said compressed signal for evaluating said compressed signal to determine if the magnitude of said compressed signal is at a predetermined value, said adaptive means including an adaptation table, said adaptation table coupled to receive said compressed signal for providing a first pointer to said one look-up table, said one look-up table having gain value entries, each said gain value entry being a step multiple of a previous said gain value entry, said first pointer pointing to one of said gain value entries in said one look-up table for selecting said first gain value, said one look-up table coupled to said first adjustment means for supplying said first gain value;

inverse quantizer means coupled to receive said compressed signal for providing an inverse quantization operation to expand said compressed signal into a second adjusted



difference signal, said second adjusted difference signal being substantially equivalent to said first adjusted difference signal;

second adjustment means coupled to receive said second adjusted difference signal for applying a second gain value and for denormalizing said second adjusted difference signal, said second gain value being a said gain value entry from said one look-up table indicated by said first pointer, said second adjustment means coupled to said adaptive means to receive said second gain value, said second gain value is a reciprocal of said first gain value, said second adjustment means output being a second difference signal substantially equivalent to said first difference signal;

second adder means coupled to receive both said second difference signal and said first predicted signal for providing a first outputted digital signal, said first outputted digital signal representing a sum of said second difference signal and said first predicted signal, said first outputted digital signal being substantially equivalent to said first inputted digital signal; and wherein

said predictor means coupled to receive said first outputted digital signal for generating a second predicted signal.

5,083,311

SOUND FIELD PRODUCING APPARATUS

Junichi Kasai; Hiroshi Imai, and Tatuyoshi Nanbu, all of Kanagawa, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 3, 1986, Ser. No. 915,114

Claims priority, application Japan, Oct. 3, 1985, 60-220903

Int. Cl.[5] H03G *3/00*

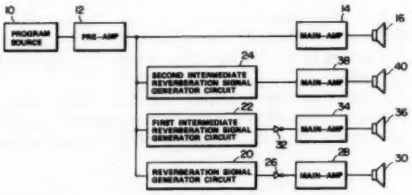
U.S. Cl. 381—63 **3 Claims**

1. An apparatus for producing a sound field in an acoustic space, comprising:

a signal source for producing a source signal;

means coupled to said signal source for directly reproducing the source signal;

a reverberation circuit including at least two reverberation signal generators coupled to said signal source for providing different predetermined time delays to the source signal for converting the source signal to reverberation signals, said reverberation circuit including a first reverberation signal generator coupled to said signal source for providing a first predetermined time delay to the source signal to convert the source signal to a first reverberation signal, and a second reverberation signal generator coupled to said signal source for providing a second predetermined time delay to the source signal to convert the source signal to a second reverberation signal, the second predetermined time delay being substantially one-half of the first predetermined time delay;



means coupled to said reverberation circuit for reproducing the reverberation signals separately from the source signal; and

at least one phase invertor connected to invert at least one of the first and second reverberation signals generated from said first and second reverberation signal generators;

wherein said means for reproducing the reverberation signals includes means for reproducing the reverberation signals independently.

5,083,312

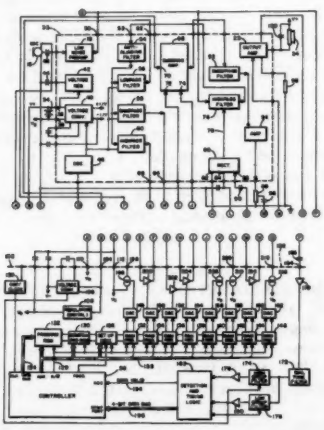
PROGRAMMABLE MULTICHANNEL HEARING AID WITH ADAPTIVE FILTER

James R. Newton, Burnsville; David A. Preves, Minnetonka, both of Minn. assignors to Argosy Electronic, Inc., Eden Prairie, Minn.

Filed Aug. 1, 1989, Ser. No. 387,828

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—68.4 **21 Claims**



1. A signal processing circuit for a hearing aid, including:

a sound pressure level transducing means for sensing an audio signal and generating an electrical signal corresponding to said sensed audio signal, and a broadband signal amplifying means for amplifying said electrical signal to produce an amplified electrical signal;

a broadband detecting means for receiving a control input and for generating a control signal having a control signal level proportional to the level of said control input;

an adaptive high-pass filtering means, having as a first input said amplified electrical signal, and as a second input said control signal, for selectively suppressing a low frequency portion of said amplified electrical signal to generate a selectively modified signal, the frequency bandwidth of said suppressed low frequency portion, relative to the width of the entire frequency spectrum of said amplified electrical signal, increasing with said control signal level;

a plurality of restricted bandwidth filters, each receiving said modified signal and enhancing a selected portion of the frequency bandwidth of said modified signal to generate a selected bandwidth signal as its output, and a summing means for receiving said selected bandwidth signals as inputs, and for generating a combined signal based on the summation of said selected bandwidth signals;

an oscillator means for generating a clocking signal provided to each of said restricted bandwidth filters to determine a control frequency for each restricted bandwidth filter, and means for adjustably controlling said oscillator means to simultaneously adjust said control frequencies; and

a receiver means for generating an audio signal corresponding to said combined signal.

5,083,313

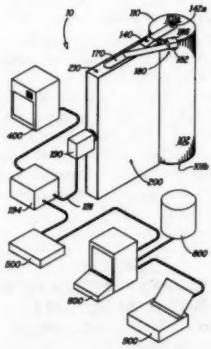
VIDEO SIGNAL DIGITIZER

Roger A. Reinsch, 20663 Greenleaf Dr., Cupertino, Calif. 95014

Filed Mar. 4, 1991, Ser. No. 664,332

Int. Cl.[5] G06K *9/46*

U.S. Cl. 382—8 **6 Claims**



1. Video signal digitizer comprising in operative combination:

a) Analog signal processing means for receiving and processing input analog interlaced or non-interlaced scan line signals representing image information from a video camera;

b) means for controlling said video signal digitizer state;

c) means for transmitting output signals to a computer, said output signals comprising words of digital information representing at least some of said video image information;

d) means for controlling video events providing signals to a means for control of scanning;

e) means for control of scanning which includes a plurality of counters to provide output signals which:

i) define by number digitizer stripes corresponding to position along a scan line;

ii) track scan lines by number and

iii) record the number of each video frame scan; and which scanning control means employs said sync signals from said analog means to control the advancing and resetting of said counters; said scanning control means providing said output signals to an output queue means;

f) said analog signal processing means producing digital outputs to said video events controller means and said scanning controller means, said digital outputs including sync level, bright-spot signal output from said video camera, and a timed signal indicting vertical sync in progress;

g) means for queuing output information;

h) means for controlling placement of digital words of information in said output queue and for retrieval of said words from said output queue for transmission from said signal receiving and transmission means, said queue controller providing signals representing output queue status to said system state control means;

i) said system state control means allowing or inhibiting scanning, transmission to the computer, performing reset functions, and responding to internal system conditions to change state to prevent error conditions; and

j) said digitizer checking image threshold and reporting image address, said address including video frame, video scan line, and position along said video scan line representing a digitizer stripe location, thereby permitting one-pass high resolution image verification, identification and location.

DESIGN PATENTS

GRANTED JAN. 21, 1992

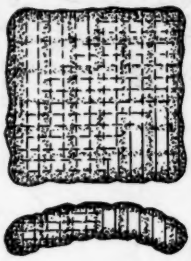
ERRATA

For CLASS	See PATENT NO.
D10-040	D323,356

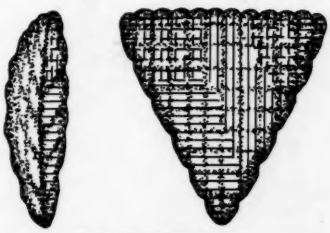
DESIGNS

JANUARY 21, 1992

323,232
FOOD PRODUCT
David K. Duffy, Maple Grove, Minn., assignor to General Mills, Inc., Minneapolis, Minn.
Filed Apr. 10, 1989, Ser. No. 335,460
Term of patent 14 years
U.S. Cl. D1—125

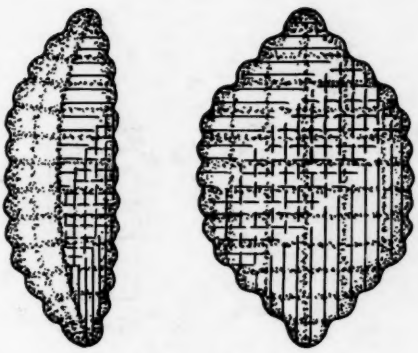


323,233
FOOD PRODUCT
David K. Duffy, Maple Grove, Minn., assignor to General Mills, Inc., Minneapolis, Minn.
Filed Apr. 10, 1989, Ser. No. 335,461
Term of patent 14 years
U.S. Cl. D1—125



323,234
FOOD PRODUCT
David K. Duffy, Maple Grove, Minn., assignor to General Mills, Inc., Minneapolis, Minn.
Filed Apr. 10, 1989, Ser. No. 335,462
Term of patent 14 years
U.S. Cl. D1—125

323,235
FOOD PRODUCT
David K. Duffy, Maple Grove, Minn., assignor to General Mills, Inc., Minneapolis, Minn.
Filed Apr. 10, 1989, Ser. No. 335,463
Term of patent 14 years
U.S. Cl. D1—125



323,236
CANDY TABLET
Gabrielle Copp, St. Louis, Mo., assignor to Societe des Produits Nestle S. A., Vevey, Switzerland
Filed Aug. 30, 1990, Ser. No. 575,991
Term of patent 14 years
U.S. Cl. D1—127

323,237

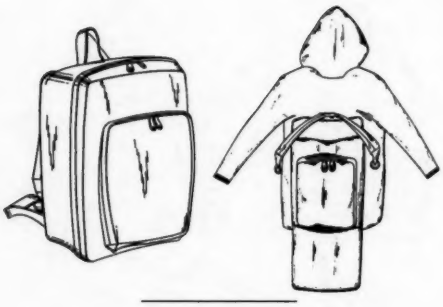
COMBINED BACKPACK AND CONVERTIBLE PARKA

Alan Zoltie, Chram, England, assignor to Alan George (U.K.) Limited, England

Filed Dec. 8, 1989, Ser. No. 449,253

Term of patent 14 years

U.S. Cl. D2—185



323,238

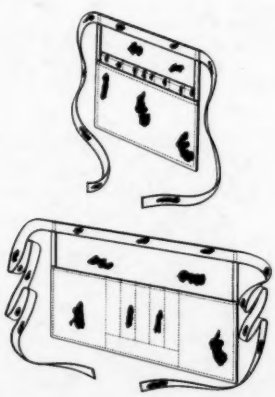
SURGICAL APRON

Mai L. Lee, 15925 Green Meadow Rd., Darnestown, Md. 20878

Filed Dec. 18, 1989, Ser. No. 452,315

Term of patent 14 years

U.S. Cl. D2—229



323,239

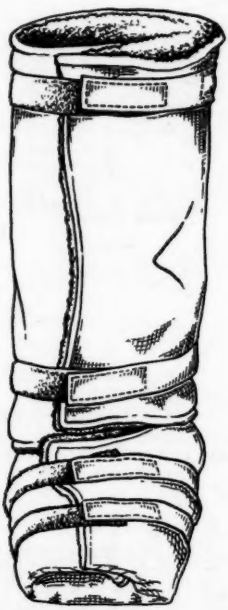
PERI-OPERATIVE BOOT

Julianne O. Rooke, Rochester, Minn., assignor to Osborn Enterprises, Inc., Rochester, Minn.

Filed Dec. 7, 1988, Ser. No. 281,002

Term of patent 14 years

U.S. Cl. D2—275



323,240

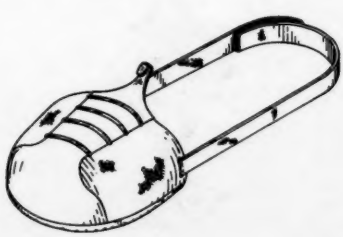
SHOE SAFETY GUARD

Kevin S. Cornell, P.O. Box 96, Waquoit, Mass. 02536

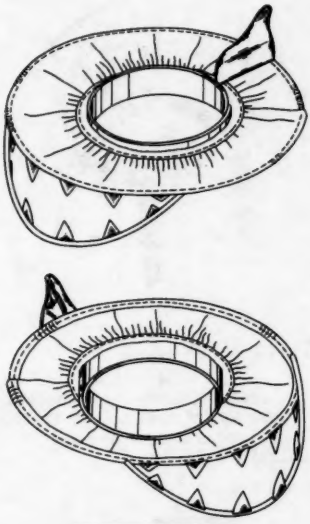
Filed Dec. 20, 1989, Ser. No. 453,481

Term of patent 14 years

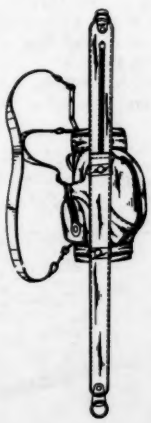
U.S. Cl. D2—277



323,241
SHOWER CAP
Andrew R. Neal, Sarnia, Canada, assignor to 814522 Ontario Limited, Ontario, Canada
Filed Dec. 23, 1988, Ser. No. 289,583
Term of patent 14 years
U.S. Cl. D2—510



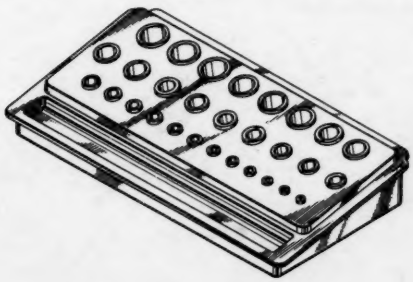
323,242
MINIATURE GOLF BAG
Donald G. Costello, P.O. Box 731, Modesto, Calif. 95353
Filed Dec. 9, 1988, Ser. No. 281,698
Term of patent 14 years
U.S. Cl. D3—37



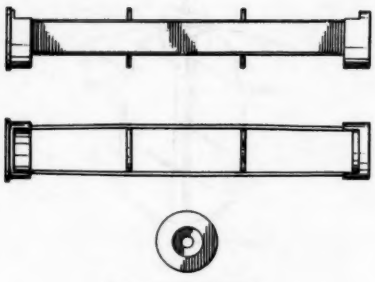
323,243
KEY HOLDER
Arthur M. Kraus, Weston, Canada, assignor to A.M.K. Investments Ltd., Ontario, Canada
Filed Oct. 24, 1989, Ser. No. 425,995
Claims priority, application Canada, Jul. 21, 1989, 21-07-89-4
Term of patent 14 years
U.S. Cl. D3—65

323,244
SUITCASE
Michel Dallaire, Montreal, Canada, assignor to La Compagnie Resentel LTEE, Marieville, Canada
Filed Oct. 13, 1989, Ser. No. 420,998
Term of patent 14 years
U.S. Cl. D3—73

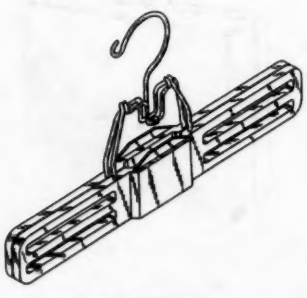
323,245
DRILL BIT HOLDER
Jody A. Hobson, Rocky River, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Aug. 11, 1989, Ser. No. 392,378
Term of patent 14 years
U.S. Cl. D3—74



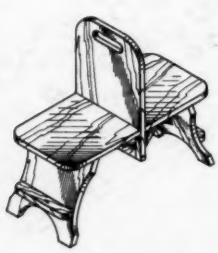
323,246
FRAME FOR A PAINT ROLLER
Barney L. Best, Johnson City, and Randolph H. L. Young, Unicoi, both of Tenn., assignors to American Bictech Inc., Erwin, Tenn.
Filed Sep. 21, 1989, Ser. No. 431,856
Term of patent 14 years
U.S. Cl. D4—122



323,247
HANGER OR SIMILAR ARTICLE
Feng-Yin Chen, No. 90-2, Hai-Pu-Tsuo Lane, Chung-Yang Rd., Lung-Ching Hsiang, Taichung Hsien, Taiwan
Filed Nov. 1, 1990, Ser. No. 607,485
Term of patent 14 years
U.S. Cl. D6—326

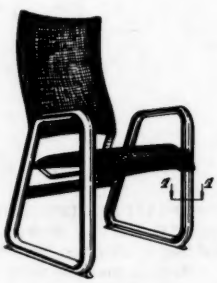


323,248
STOOL
James C. Offutt, and John Grissom, both of Peoria, Ill., assignors to Rimball Marketing and Development, Inc., Peoria, Ill.
Filed Feb. 10, 1989, Ser. No. 309,536
Term of patent 14 years
U.S. Cl. D6—357

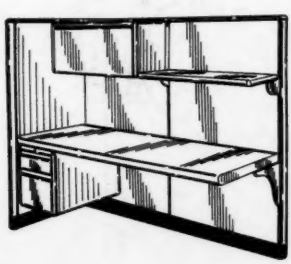


323,249
ARM CHAIR
Larry A. Schwartz, Franklin Lakes, N.J., assignor to Magellan International, Inc., Fort Lee, N.J.
Filed Feb. 21, 1991, Ser. No. 658,840
Term of patent 14 years
U.S. Cl. D6—370

323,250
ARM CHAIR
Roger K. Leib, 208 S. McCadden Pl., Los Angeles, Calif. 90004
Filed Apr. 25, 1988, Ser. No. 186,125
Term of patent 14 years
U.S. Cl. D6—373

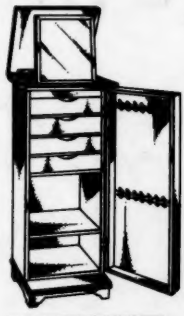


323,251
COMBINED DESK, WALL PANEL AND STORAGE UNIT
Otto Zapf, Koenigstein/TS, Fed. Rep. of Germany, assignor to Allsteel Inc., Aurora, Ill.
Filed Jul. 24, 1989, Ser. No. 384,018
Term of patent 14 years
U.S. Cl. D6—422

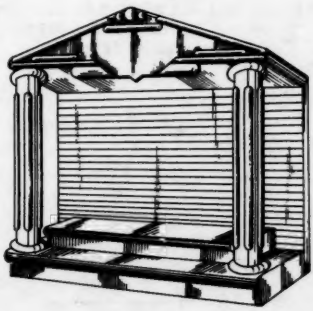


323,252
FOLDABLE TEA CART
Leander H. Anske, 10859 Abbott Ave., Sun City, Ariz. 85351
Filed Mar. 31, 1989, Ser. No. 330,878
Term of patent 14 years
U.S. Cl. D6—429

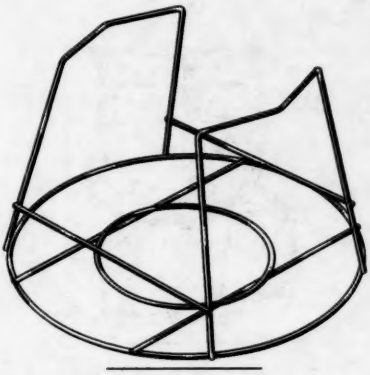
323,253
CHEST
Larry Powell, Los Angeles, Calif., assignor to L. Powell Co., Culver City, Calif.
Filed May 24, 1989, Ser. No. 356,831
The portion of the term of this patent subsequent to Aug. 20, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—440



323,254
DISPLAY STAND
Gerard Reda, Plainview, N.Y., assignor to Toddler U Inc., Westport, Conn.
Filed May 15, 1989, Ser. No. 351,912
Term of patent 14 years
U.S. Cl. D6—450

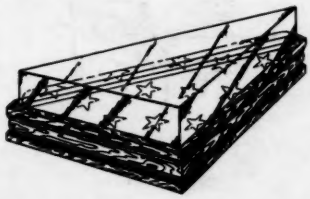


323,255
STAND FOR PROPANE TANKS
Richard D. Titus, 2621 Pioneer La., St. Cloud, Minn. 56301
Filed Mar. 20, 1989, Ser. No. 325,501
Term of patent 14 years
U.S. Cl. D6—458

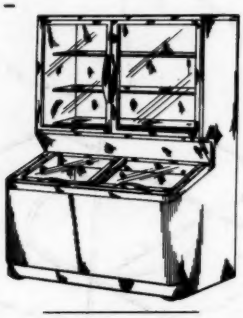


323,256
ETAGERE
Peter M. Y. Kee, Happy Valley, Hong Kong, assignor to Rosalco, Inc., Jeffersonville, Ind.
Division of Ser. No. 560,321, Jul. 31, 1990, Pat. No. Des. 318,388. This application Apr. 1, 1991, Ser. No. 677,955
Term of patent 14 years
U.S. Cl. D6—465

323,257
FLAG DISPLAY CASE
Diana E. Cornwell, 2196 Canyon, #F, Costa Mesa, Calif. 92627
Filed Sep. 19, 1988, Ser. No. 245,541
Term of patent 14 years
U.S. Cl. D6—470

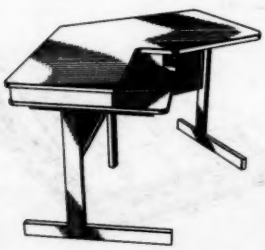


323,258
FREEZER SHOWCASE
Hiroyuki Miyabayashi, Gunma, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Jan. 17, 1989, Ser. No. 298,507
Claims priority, application Japan, Jul. 28, 1988, 63-30237
Term of patent 14 years
U.S. Cl. D6—471



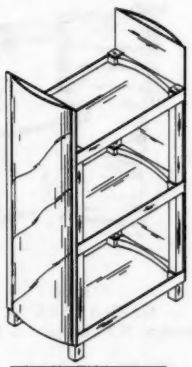
323,259
SHELF UNIT
David Evans, Acton, Mass., assignor to Tucker Housewares, Inc., Leominster, Mass.
Filed Mar. 16, 1989, Ser. No. 324,336
Term of patent 14 years
U.S. Cl. D6—474

323,260
COMPUTER TABLE
John H. Lewis, 2205 Jonathan Ct., Euless, Tex. 76040
Filed Jul. 13, 1989, Ser. No. 379,157
Term of patent 14 years
U.S. Cl. D6—474



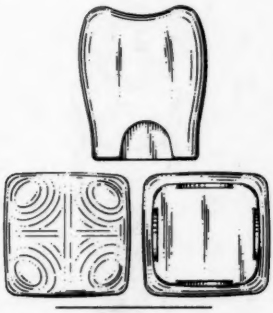
323,261
TABLE
Susan K. Leis, and James Geier, both of Chicago, Ill., assignors to Liz Clairborne, Inc., New York, N.Y.
Filed Feb. 8, 1989, Ser. No. 308,380
Term of patent 14 years
U.S. Cl. D6—477

323,262
PRODUCT DISPLAY UNIT WITH MIRRORED SIDE PANELS
Paul L. Flum, Ladue, Mo., assignor to Paul Flum Ideas, Inc., St. Louis, Mo.
Filed Jan. 9, 1989, Ser. No. 295,157
Term of patent 14 years
U.S. Cl. D6—479

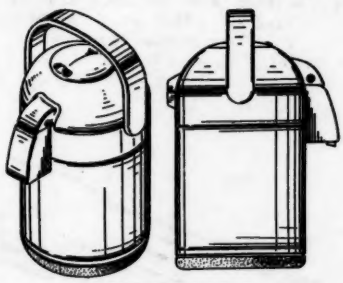


323,263
COMBINED TABLE AND BOWL
Melvin Blackburn, P.O. Box 55127, Riverside, Calif. 92517
Filed May 30, 1989, Ser. No. 359,412
Term of patent 14 years
U.S. Cl. D6—486

323,264
TOOTHPASTE DISPENSER HOUSING
James J. DeVigili, 1620 Port Ave., Naples, Fla. 33942
Filed Nov. 27, 1989, Ser. No. 441,429
Term of patent 14 years
U.S. Cl. D6—542



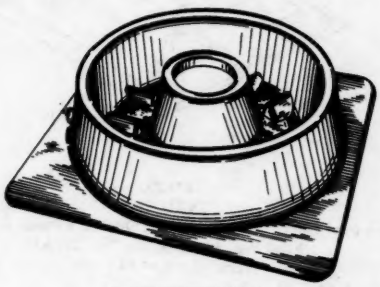
323,265
THERMAL VACUUM AIRPOT
Fuu S. Lu, 80 Lane 2, Section 1 An Her Road, Tainan, Taiwan
Filed May 1, 1989, Ser. No. 345,528
Term of patent 14 years
U.S. Cl. D7—320



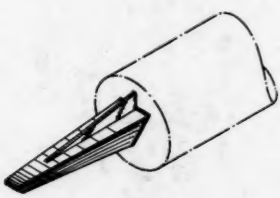
323,266
MUG
Dale E. Caya, 2043 Finch Dr., Bensalem, Pa. 19020
Filed May 30, 1989, Ser. No. 357,870
Term of patent 14 years
U.S. Cl. D7—517

323,267
COMBINED PERSONAL COOLER AND SEAT
Christopher C. Bidwell, Berkely Lake, Ga., assignor to Paul Flum Ideas, Inc., St. Louis, Mo.
Filed Feb. 2, 1990, Ser. No. 473,695
Term of patent 14 years
U.S. Cl. D7—606

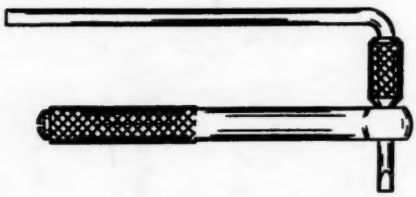
323,268
PLANT FEEDER
Roy Reiman, Greendale, Wis., assignor to Reiman Associates, Inc., Greendale, Wis.
Filed Oct. 23, 1989, Ser. No. 425,100
Term of patent 14 years
U.S. Cl. D8—1



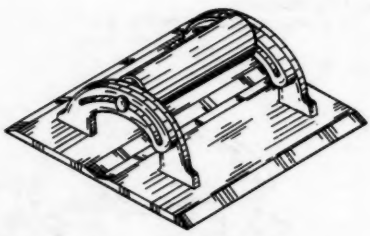
323,269
CAULKING GUN CARTRIDGE NOZZLE
George C. Kelly; Rolan J. Goyer, both of Pryor, Okla., and Daniel B. Podlesny, Landing, N.J., assignors to Red Devil, Inc., Union, N.J.
Filed Apr. 4, 1986, Ser. No. 850,335
Term of patent 14 years
U.S. Cl. D8—14.1



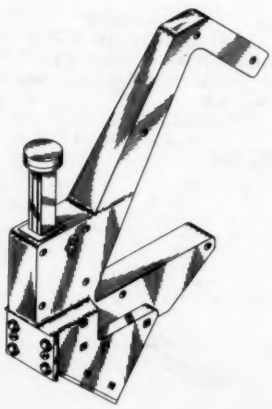
323,270
COMBINED RATCHET SCREW DRIVER AND HOLDER
Joseph E. Carchidi, Whitman, Mass., assignor to ACE Surgical Supply Co., Brockton, Mass.
Filed Mar. 29, 1989, Ser. No. 330,099
Term of patent 14 years
U.S. Cl. D8—21



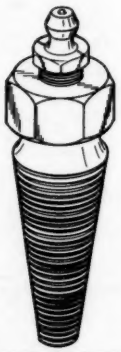
323,271
ADJUSTABLE TROWEL
Roger S. Barenthsen, 2025 Third Ave. East, West Fargo, N. Dak. 58078
Filed May 11, 1989, Ser. No. 350,688
Term of patent 14 years
U.S. Cl. D8—45



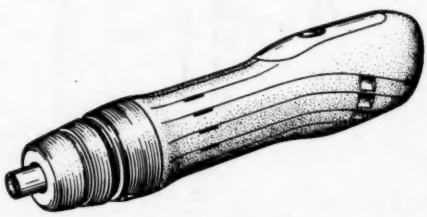
323,272
NAILER
Jena-Paul Dion, 327 - 21st Street, Quebec, Canada G1L 1Y6
Filed Sep. 30, 1988, Ser. No. 254,831
Term of patent 14 years
U.S. Cl. D8—49



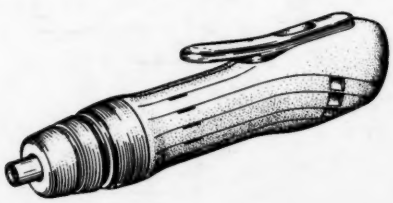
323,273
BUSHING EXTRACTOR
Frank B. Davis, 4997 Santa Rita Rd., Richmond, Calif. 94803
Filed Feb. 13, 1989, Ser. No. 309,067
Term of patent 14 years
U.S. Cl. D8—51



323,274
PORTABLE ELECTRIC SCREW DRIVER
Yuichiro Sasaki, and Yoshiaki Adachi, both of Katsuta, Japan, assignors to Hitachi Koki Company, Ltd., Japan
Filed Apr. 7, 1989, Ser. No. 334,947
Term of patent 14 years
U.S. Cl. D8—61



323,275
PORTABLE ELECTRIC SCREW DRIVER
Yuichiro Sasaki, and Yoshiaki Adachi, both of Katsuta, Japan, assignors to Hitachi Koki Company, Ltd., Japan
Filed Apr. 7, 1989, Ser. No. 334,948
Term of patent 14 years
U.S. Cl. D8—61



323,276

CORDLESS SCREWDRIVER

Fusao Fushiya, and Michio Okumura, both of Anjo, Japan, assignors to Makita Electric Works, Ltd., Anjo, Japan

Filed Dec. 6, 1988, Ser. No. 280,517

Claims priority, application Japan, Jul. 11, 1988, 63-27635

Term of patent 14 years

U.S. Cl. D8—68

323,277

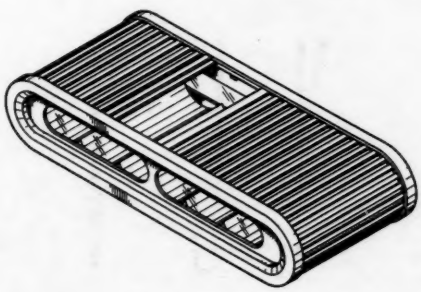
WRENCH SOCKET DISPENSER

Kurt J. Kruger, Milford, and John T. Loechner, Westport, both of Conn., assignors to Easco Hand Tools, Inc., Lancaster, Pa.

Filed Apr. 19, 1989, Ser. No. 340,585

Term of patent 14 years

U.S. Cl. D8—71



323,278

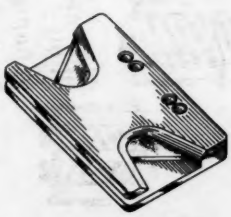
TOOL FOR REMOVING BUTTONS FROM CLOTHING

Michael L. Zwick, Akron, Ohio, assignor to Tex-Tec, Inc., Akron, Ohio

Filed Apr. 18, 1988, Ser. No. 182,749

Term of patent 14 years

U.S. Cl. D8—98



323,279

REAR, TOP, BOTTOM, LEFT AND RIGHT SURFACES OF AN ARMREST CONTROL LEVER FOR USE WITH A MOTOR VEHICLE TRANSMISSION OR THE LIKE

Richard Soederberg, Muehlacker, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 26, 1988, Ser. No. 161,178

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1987, 6301

Term of patent 14 years

U.S. Cl. D8—300

323,280

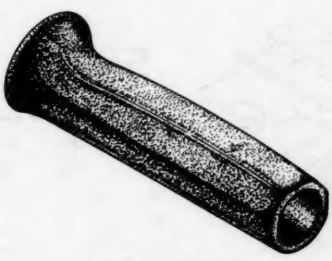
HANDLEBAR GRIP

Lee C. Chen, Tainan Hsien, Taiwan, assignor to Co-Union Industry Co., Ltd., Tainan Hsien, Taiwan

Filed Jul. 20, 1990, Ser. No. 554,833

Term of patent 14 years

U.S. Cl. D8—303



323,281

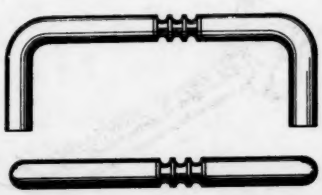
HANDLE FOR A CABINET OR SIMILAR ARTICLE

James E. Young, Chico, Calif., assignor to Transfer Flow International, Inc., Chico, Calif.

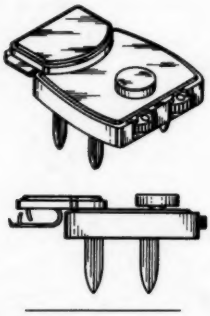
Filed Dec. 1, 1989, Ser. No. 444,365

Term of patent 14 years

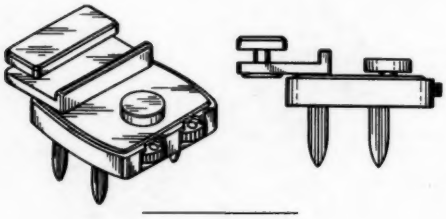
U.S. Cl. D8—320



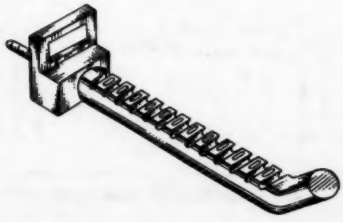
323,282
LUGGAGE LOCK
Urs Gisiger, Schulhausstrasse 19, 2545 Selzach, Switzerland
Filed Aug. 2, 1990, Ser. No. 562,134
Term of patent 14 years
U.S. Cl. D8—331



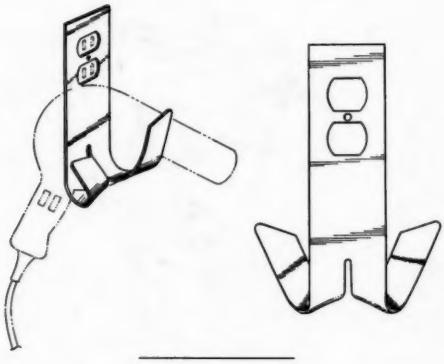
323,283
LUGGAGE LOCK
Urs Gisiger, Schulhausstrasse 19, 2545 Selzach, Switzerland
Filed Aug. 2, 1990, Ser. No. 562,135
Term of patent 14 years
U.S. Cl. D8—331



323,284
CAR CLOTHES HANGER BRACKET
Norman H. Thompson, 1250 Ribbon St., Foster City, Calif. 94404
Filed May 11, 1989, Ser. No. 351,612
Term of patent 14 years
U.S. Cl. D8—363

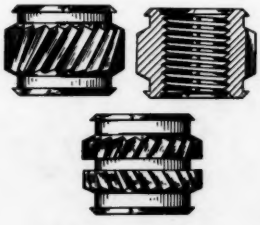


323,285
HAND APPLIANCE SUPPORT OR SIMILAR ARTICLE
Robert D. Thomson, 24609 Graham Rd., Redford Township, Wayne County, Mich. 48239
Filed Oct. 3, 1988, Ser. No. 252,713
Term of patent 14 years
U.S. Cl. D8—372



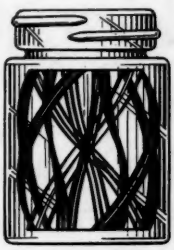
323,286
CHRISTMAS TREE GARLAND HOOK
Gary R. Roetting, 8797 Revere Run, West Chester, Ohio 45069
Filed Apr. 20, 1990, Ser. No. 511,519
Term of patent 14 years
U.S. Cl. D8—372

323,287
INSERT FOR PLASTIC MOLDED PARTS
Michael J. Brunetti, West Haven, Conn., assignor to Engineered Inserts & Systems Inc., Watertown, Conn.
Filed May 31, 1988, Ser. No. 200,298
Term of patent 14 years
U.S. Cl. D8—385

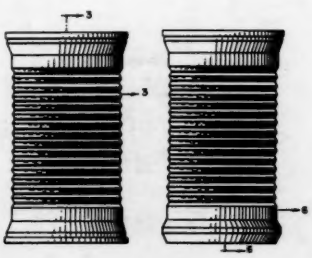


323,288
INSERT FOR PLASTIC MOLDED PARTS
Michael J. Brunetti, West Haven, Conn., assignor to Engineered Inserts & Systems Inc., Watertown, Conn.
Filed May 31, 1988, Ser. No. 200,299
Term of patent 14 years
U.S. Cl. D8—385

323,289
COSMETIC CONTAINER
David Hoenig, East Brunswick, N.J., assignor to Revlon, Inc., New York, N.Y.
Filed Mar. 18, 1988, Ser. No. 171,508
The portion of the term of this patent subsequent to Jan. 15, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—337



323,290
CAN
Vicent W. Keedy, Jr., New Castle, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed May 11, 1989, Ser. No. 351,320
Term of patent 14 years
U.S. Cl. D9—351

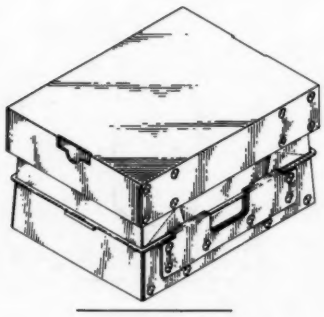


323,291
BOTTLE
Frank R. Wilgus, Powell, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jan. 16, 1990, Ser. No. 466,828
Term of patent 14 years
U.S. Cl. D9—371

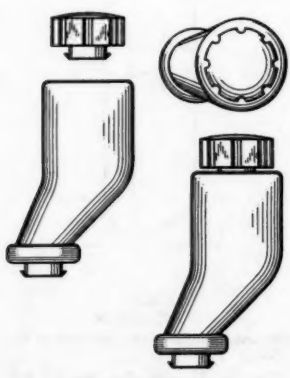
323,292
CONTAINER
Joe Jones, Northwood, England, assignor to Beecham Group p.l.c., Middlesex, England
Filed Jan. 25, 1989, Ser. No. 301,742
Term of patent 14 years
U.S. Cl. D9—377

323,293
CONTAINER
Ronald R. Gutkowski, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Jul. 28, 1989, Ser. No. 387,304
Term of patent 14 years
U.S. Cl. D9—377

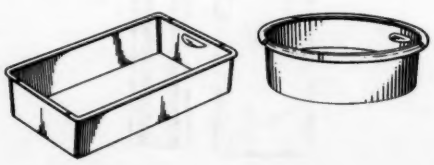
323,294
COLLAPSIBLE BOX
Hugh J. Williams, Laconia, N.H., assignor to Mills Industries, Inc., Laconia, N.H.
Filed Dec. 1, 1989, Ser. No. 444,615
Term of patent 14 years
U.S. Cl. D9—432



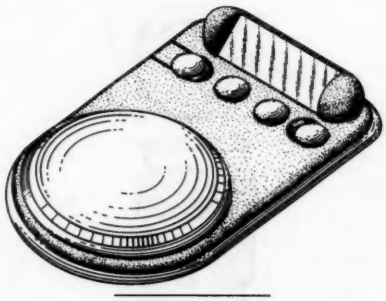
323,295
COMBINED CAP AND POUR SPOUT FOR OIL CONTAINERS
Lawrence C. Osowiecki, P.O. Box 441, Suffield, Conn. 06078
Filed Jul. 10, 1989, Ser. No. 377,307
Term of patent 14 years
U.S. Cl. D9—447



323,296
SUPPORT FOR BAGS
Clifford Schoenthaler, Rte. 3, Box 100A, Norton, Kans. 67654
Filed Apr. 21, 1989, Ser. No. 341,675
Term of patent 14 years
U.S. Cl. D9—456

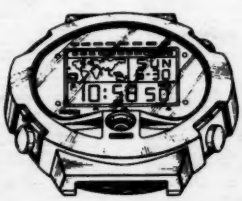


323,297
ALARM CLOCK
Noel E. Zeller, c/o Zelco Industries, Inc., 630 S. Columbus Ave., Mount Vernon, N.Y. 10550
Filed May 8, 1989, Ser. No. 348,756
Term of patent 14 years
U.S. Cl. D10—15

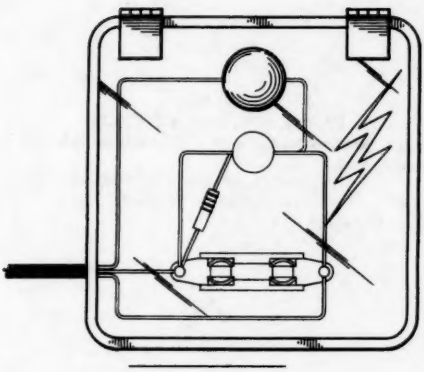


323,298
WRIST WATCH
Kazuyo Kawashima, Tachikawa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 20, 1989, Ser. No. 383,343
Term of patent 14 years
U.S. Cl. D10—39

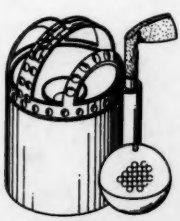
323,299
WRIST WATCH
Masamichi Wakamatsu, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 27, 1989, Ser. No. 386,552
Term of patent 14 years
U.S. Cl. D10—39



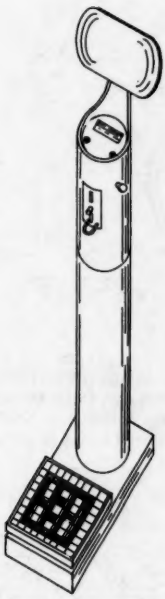
323,300
FUSE TESTER
James F. Define, Sr., 3614 W. Missouri Ave., Phoenix, Ariz. 85019
Filed Apr. 3, 1989, Ser. No. 332,108
Term of patent 14 years
U.S. Cl. D10—78



323,301
ROTATING AXIS MARKING UNIT FOR GOLF BALL
Tzu-Keng Cheng, 197 Shin-Sheng St., Chung-Ho City, Taipei, Taiwan
Filed Feb. 2, 1989, Ser. No. 305,492
Term of patent 14 years
U.S. Cl. D10—82

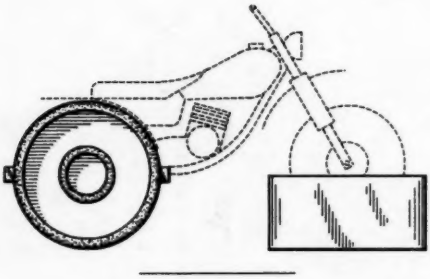


323,302
WEIGHING SCALE
Oriz W. Johnson, 7086 Butterwood Dr., Cincinnati, Ohio 45241
Filed Aug. 24, 1989, Ser. No. 400,023
Term of patent 14 years
U.S. Cl. D10—93

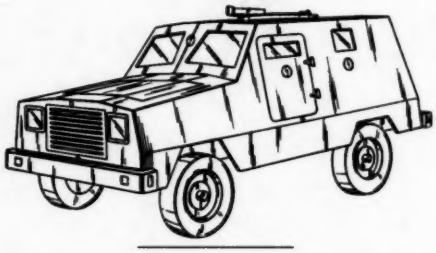


323,303
WARNING AND INFORMATION SIGN FOR A VEHICLE
Lars-Gunnar Johansson, 28 Rue St:t Joseph, F-83310 Freinet, France, and Daniel Miles, Köpstadsö , S-430 84 Styrsö , Sweden
Filed Jun. 13, 1989, Ser. No. 366,018
Claims priority, application Sweden, Dec. 13, 1988, 88-2870
Term of patent 14 years
U.S. Cl. D10—114

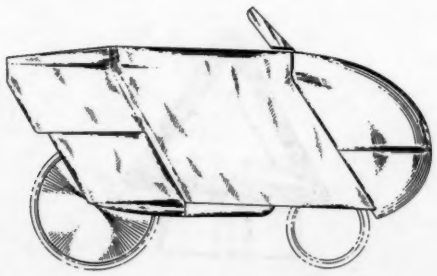
323,304
ALL TERRAIN VEHICLE FLOTATION UNIT
Timothy L. Morgan, Rte. 1, Box 223, Mt. Auburn, Ill. 62547
Filed Jan. 13, 1989, Ser. No. 296,984
Term of patent 14 years
U.S. Cl. D12—1



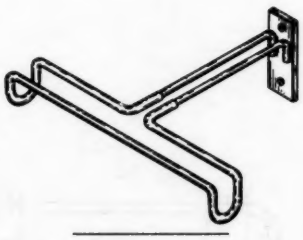
323,305
ARMORED VEHICLE
Norman E. Smith, 23895 Oak Circle Dr., Elsinore, Calif. 92330
Filed May 2, 1989, Ser. No. 346,157
Term of patent 14 years
U.S. Cl. D12—12



323,306
RECUMBENT BICYCLE
Timothy E. Brummer, 801 W. Ocean Ave., Lompoc, Calif. 93436
Filed Sep. 28, 1987, Ser. No. 102,597
The portion of the term of this patent subsequent to Nov. 21, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—111

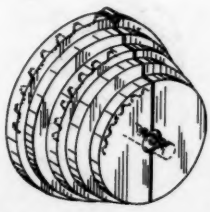


323,307
BICYCLE SUPPORT RACK
James H. Fernandez-Bell, 1826 Dupont Ave., N., Minneapolis, Minn. 55411, assignor to James H. Fernandez-Bell, Minneapolis, Minn.
Filed Feb. 8, 1990, Ser. No. 476,675
Term of patent 14 years
U.S. Cl. D12—115



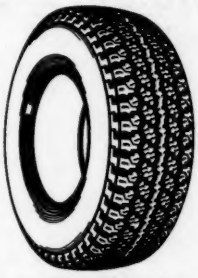
323,308
CRANK ARM FOR A BICYCLE
Ysmael E. Romero, Santa Paula, Calif., assignor to Seattle Bike Supply, Kent, Wash.
Filed Jun. 11, 1990, Ser. No. 535,962
Term of patent 14 years
U.S. Cl. D12—123

323,309
BICYCLE FREEWHEEL GEAR COVER
Paul L. Perry, 1611 Cuevas Cir., Salinas, Calif. 93906
Filed Feb. 17, 1989, Ser. No. 311,891
Term of patent 14 years
U.S. Cl. D12—127

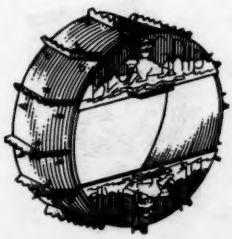


323,310
AUTOMOBILE TIRE
Akihiro Nakatani, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Sep. 21, 1990, Ser. No. 586,038
Claims priority, application Japan, Mar. 23, 1990, 2-9786
Term of patent 14 years
U.S. Cl. D12—146

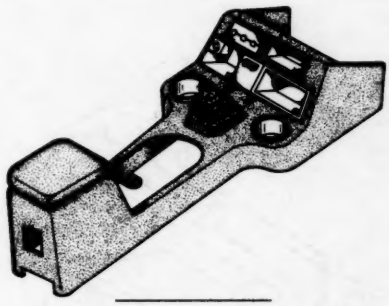
323,311
AUTOMOBILE TIRE
Fumikazu Yamashita, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Feb. 23, 1990, Ser. No. 483,772
Claims priority, application Japan, Aug. 24, 1989, 1-30775
Term of patent 14 years
U.S. Cl. D12—148



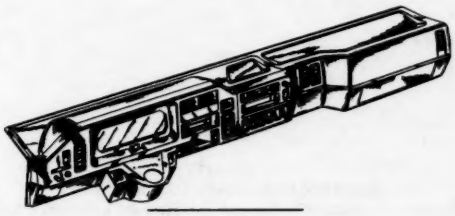
323,312
TRACTION BAND FOR VEHICLE TIRE
Bruce A. Tandy, R.R. 4, Box 346-H, Madison, Ind. 47250
Filed Feb. 23, 1989, Ser. No. 313,819
Term of patent 14 years
U.S. Cl. D12—154



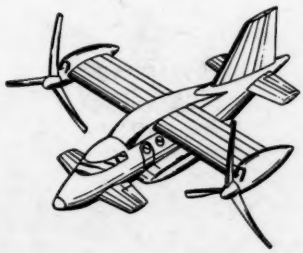
323,313
CENTRAL CONSOLE BOX FOR VEHICLE
Chuan-Fu Li, No. 162, Kuang Ping Street, Ping Cheng Hsiang, Taoyuan Hsien, Taiwan, Taiwan
Filed Nov. 16, 1989, Ser. No. 437,503
Term of patent 14 years
U.S. Cl. D12—155



323,314
MOTORHOME DASHBOARD (I)
John Slayter, Riverside, Calif., assignor to Fleetwood Enterprises, Inc., Riverside, Calif.
Filed Aug. 8, 1989, Ser. No. 391,363
Term of patent 14 years
U.S. Cl. D12—192



323,315
DUAL MODE AIR VEHICLE
Cecil W. Haga, Arlington, Tex., assignor to The Ishida Foundation, Nagoya, Japan
Filed May 30, 1989, Ser. No. 357,924
Term of patent 14 years
U.S. Cl. D12—331



323,316

HOUSING FOR ELECTRICAL CONNECTOR

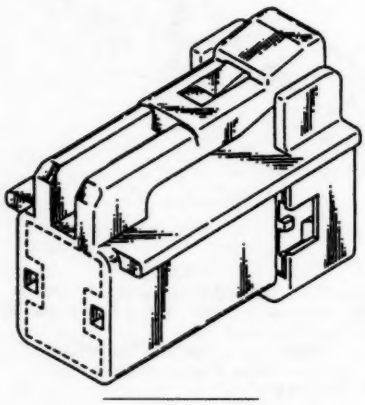
Kenji Ohkura, Hisai, and Shinichi Uchida, Yokkaichi, both of Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Nov. 22, 1989, Ser. No. 441,394

Claims priority, application Japan, Jun. 9, 1989, 1-21416

Term of patent 14 years

U.S. Cl. D13—133



323,317

ELECTRICAL CONNECTOR HOUSING

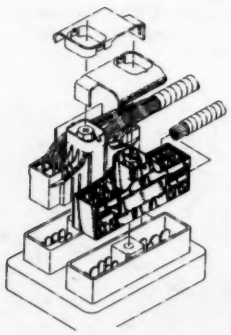
Yasuhiro Nagasaka, Toyota, and Yuji Hatagishi, Shizuoka, both of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jul. 3, 1989, Ser. No. 375,329

Claims priority, application Japan, Jan. 6, 1989, 1-000050

Term of patent 14 years

U.S. Cl. D13—147



323,318

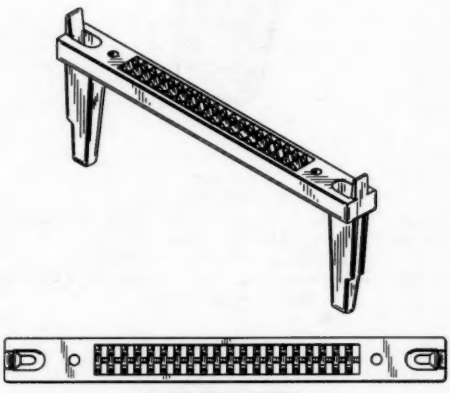
MAGAZINE FOR A PLURALITY OF TUBE ASSEMBLIES CARRYING INTEGRATED CIRCUIT CHIPS

Paul Feinstein, Jr., Austin; Ronald E. Hunt, Georgetown; Alan J. Schwartz, Cedar Park, and Verlon E. Whitehead, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1989, Ser. No. 453,435

Term of patent 14 years

U.S. Cl. D13—182



323,319

CABINET FOR ELECTRONIC PROCESSING EQUIPMENT AND THE LIKE

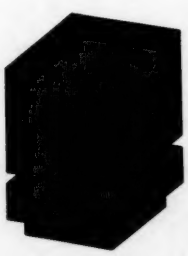
W. Daniel Hillis, Brookline, Mass., assignor to Thinking Machines Corporation, Cambridge, Mass.

Filed Jul. 22, 1988, Ser. No. 223,899

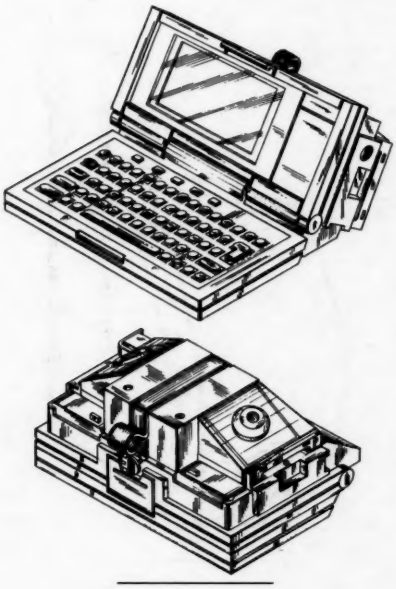
The portion of the term of this patent subsequent to Aug. 6, 2005, has been disclaimed.

Term of patent 14 years

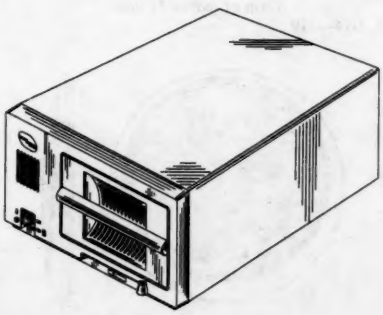
U.S. Cl. D14—102



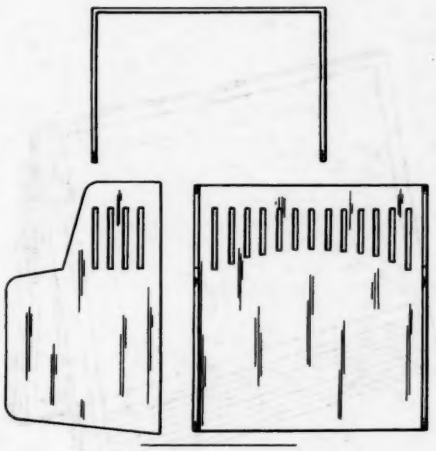
323,320
LAPTOP COMPUTER
Michael Strong, Corona Del Mar; Chuck Jones, Chino, and Stuart M. Hagen, Santa Ana, all of Calif., assignors to Symbol Technologies, Inc., Bohemia, N.Y.
Filed Mar. 12, 1990, Ser. No. 491,646
Term of patent 14 years
U.S. Cl. D14—106



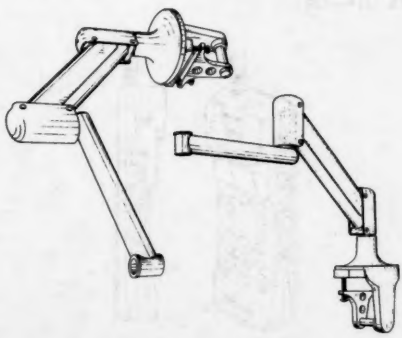
323,321
COMBINED DISK DRIVE AND MODULE
Jeffrey L. Kline, Austin, and Edward J. Sabella, Georgetown, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 29, 1990, Ser. No. 471,981
Term of patent 14 years
U.S. Cl. D14—109



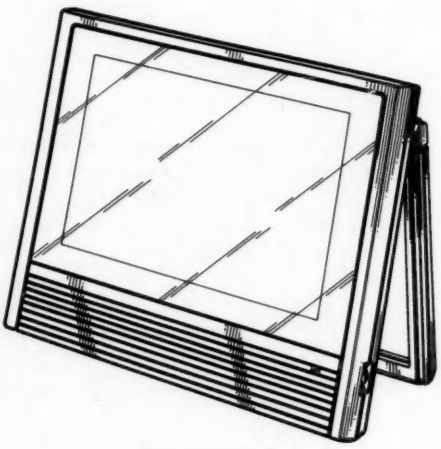
323,322
COMPUTER MONITOR VISOR
John Cress, 737 Greenbriar, Lake Forest, Ill. 60045, and Benjamin P. Cress, 2941 N. Broadway #2L, Chicago, Ill. 60657
Filed May 8, 1989, Ser. No. 349,129
Term of patent 14 years
U.S. Cl. D14—114



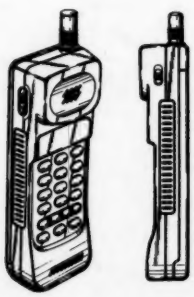
323,323
SWIVEL ARM FOR SUPPORTING DATA PROCESSING EQUIPMENT
Walther Klaebel, Nykobing Sjaelland, Denmark, assignor to Skandinavisk Data Tilbehor ApS, Frederiksberg C, Denmark
Filed Aug. 2, 1989, Ser. No. 388,470
Claims priority, application Denmark, Feb. 3, 1989, MA01231989
Term of patent 14 years
U.S. Cl. D14—114



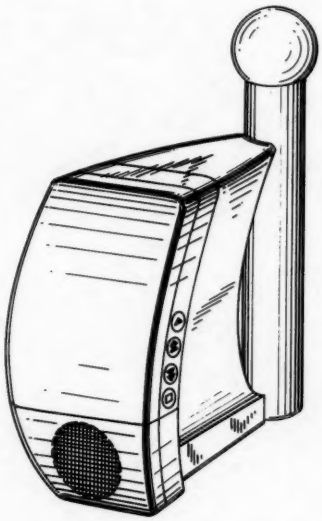
323,324
VIDEO DISPLAY
Masami Suda, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Dec. 28, 1989, Ser. No. 458,383
Claims priority, application Japan, Jul. 18, 1989, 1-26343
Term of patent 14 years
U.S. Cl. D14—125



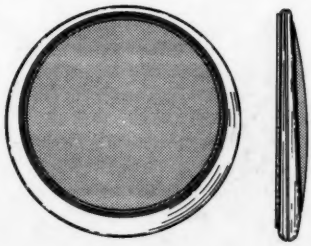
323,325
PORTABLE RADIO TELEPHONE
Naoko Seki, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Sep. 25, 1990, Ser. No. 587,833
Claims priority, application Japan, Apr. 9, 1990, 2-11855
Term of patent 14 years
U.S. Cl. D14—138



323,326
PORTABLE RECORDING AND REPRODUCING SYSTEM OR THE LIKE
Hideo Takawo, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan
Division of Ser. No. 445,655, Nov. 29, 1989. This application Jun. 7, 1990, Ser. No. 548,631
Term of patent 14 years
U.S. Cl. D14—160

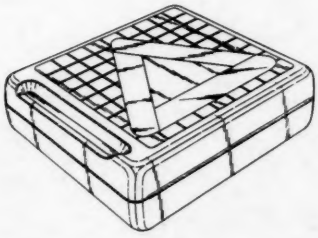


323,327
SPEAKER GRILLE
Grant M. N. Davidson, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 16, 1988, Ser. No. 286,571
Claims priority, application United Kingdom, Jul. 15, 1988, 1052319
Term of patent 14 years
U.S. Cl. D14—219

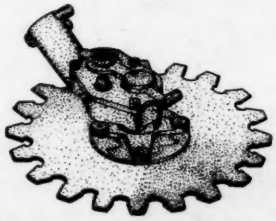


323,328
AUTOMOTIVE ENGINE HEAT EXCHANGER
Leonard Craig, P.O. Box 132, Penryn, Calif. 95663
Filed Jul. 31, 1989, Ser. No. 386,961
Term of patent 14 years
U.S. Cl. D15—5

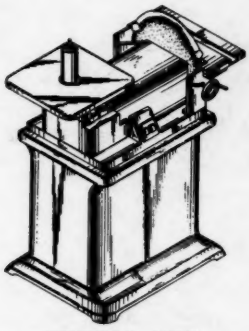
323,329
COMBINED COMPRESSOR AND LAMP
Kui-Sum Wong, 5th Floor, Hong Kong Worsted Mills Industrial Building, 31-39 Wo Tong Tsui Street, Kwai Chung, New Territories, Hong Kong
Filed Jun. 22, 1989, Ser. No. 369,929
Claims priority, application United Kingdom, Jan. 27, 1989, 1056668
Term of patent 14 years
U.S. Cl. D15—9



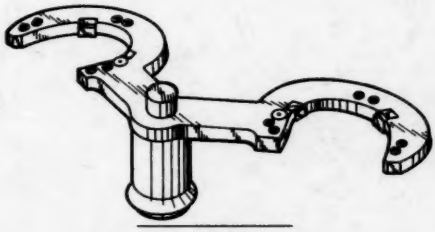
323,330
CUTTING WHEEL ASSEMBLY FOR USE IN A MOWING APPARATUS
Minoru Wada, Hamura, and Mitsuru Taniguchi, Tokyo, both of Japan, assignors to Komatsu Zenoah Co., Tokyo, Japan
Filed Jan. 13, 1989, Ser. No. 297,231
Term of patent 14 years
U.S. Cl. D15—29



323,331
ADJUSTABLE GRINDER
Tian-Wang Wang, No. 110-23, Hsin Pin Rd., Tai Pin Hsiang, Taichung Hsien, Taiwan
Filed Sep. 29, 1988, Ser. No. 250,810
Term of patent 14 years
U.S. Cl. D15—125

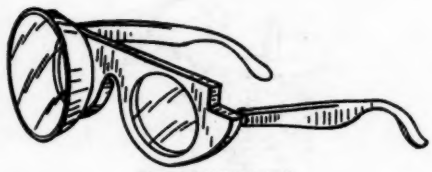


323,332
HANDLING ARM FOR BOATS FOR THERMAL TREATMENT OF SEMICONDUCTOR WAFERS
Katsumi Ishii, Fujino; Mitsuo Katoh, Sagamihara, and Shingo Watanabe, Aikawa, all of Japan, assignors to Tel Sagami Limited, Kanagawa, Japan
Filed Jan. 25, 1989, Ser. No. 301,992
Claims priority, application Japan, Jul. 25, 1988, 63-29834
Term of patent 14 years
U.S. Cl. D15—199

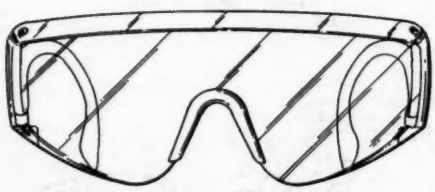


323,333
EYEGLASSES
James H. Jannard, San Juan Capistrano, and Gregory F. Arnette, South Laguna Beach, both of Calif., assignors to Oakley, Inc., Irvine, Calif.
Filed Aug. 22, 1989, Ser. No. 397,091
Term of patent 14 years
U.S. Cl. D16—112

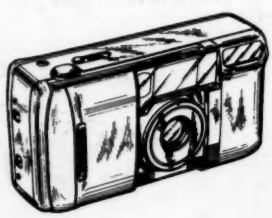
323,334
SUNGLASSES
Joseph Sugarman, 26 Princeville La., Las Vegas, Nev. 89113
Filed Nov. 2, 1989, Ser. No. 430,440
Term of patent 14 years
U.S. Cl. D16—102



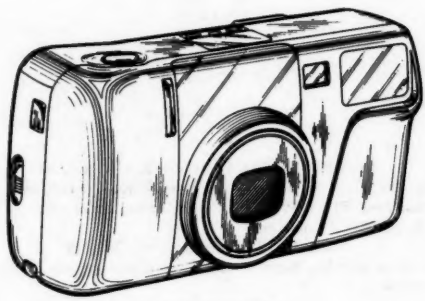
323,335
PROTECTIVE GLASSES
Christian Dalloz, Geovresset, France, assignor to Christian Dalloz SA, Saint Claude, France
Filed Dec. 18, 1989, Ser. No. 452,299
Claims priority, application Canada, Sep. 1, 1989, 01098910
Term of patent 14 years
U.S. Cl. D16—112



323,336
35 MM CAMERA
Ken Moro, Tokyo; Hiroshi Kobayashi, Kawasaki, and Akira Nojima, Fussa, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Jul. 7, 1989, Ser. No. 376,533
Claims priority, application Japan, Jan. 24, 1989, 1-2022
Term of patent 14 years
U.S. Cl. D16—209

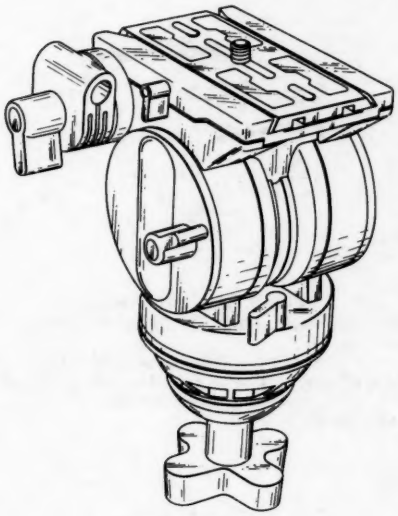


323,337
35 MM CAMERA
Ken Moro; Jun Akabane, both of Tokyo, and Hiroshi Kobayashi, Kawasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Mar. 12, 1990, Ser. No. 491,648
Claims priority, application Japan, Sep. 16, 1989, 1-33880
Term of patent 14 years
U.S. Cl. D16—209



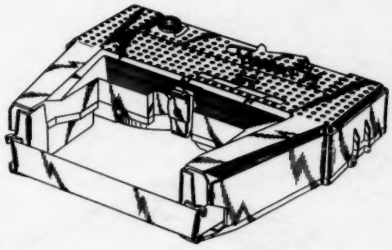
323,338
COLLAPSIBLE PROJECTION SCREEN
Nigel T. Court, 5 Gracedale Road, London SW16 6SW, England
Continuation-in-part of Ser. No. 918,857, Oct. 14, 1986, abandoned. This application Apr. 24, 1989, Ser. No. 342,442
Claims priority, application United Kingdom, Apr. 14, 1986, 1033447
Term of patent 14 years
U.S. Cl. D16—241

323,339
TRIPOD HEAD
Masao Ishikawa, c/o Heiwa Seiki Kogyo Co., Ltd., 978-1, Nishibukuro, Yashio-city, Saitama, Japan
Filed Jul. 27, 1989, Ser. No. 385,501
Claims priority, application Japan, Feb. 2, 1989, 1-3671
Term of patent 14 years
U.S. Cl. D16—245

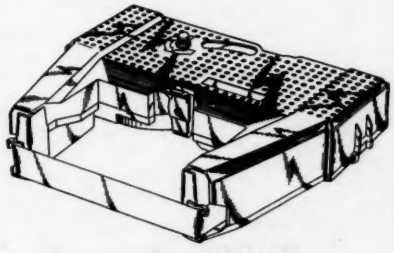


323,340
ELECTRONIC WIND INSTRUMENT
Daizo Sato, Shizuoka, Japan, assignor to Yamaha Corporation, Japan
Filed Aug. 30, 1989, Ser. No. 400,754
Claims priority, application Japan, May 16, 1989, 1-17816
Term of patent 14 years
U.S. Cl. D17—10

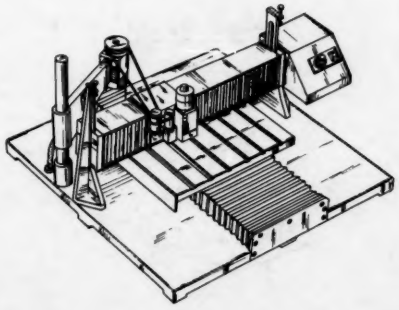
323,341
INK RIBBON CARTRIDGE
Mario Bellini, Via Borgonuovo 19, 20121 Milan, Italy
Filed Mar. 28, 1984, Ser. No. 594,262
Claims priority, application Italy, Nov. 8, 1983, 53896/83[U]
Term of patent 14 years
U.S. Cl. D18—12



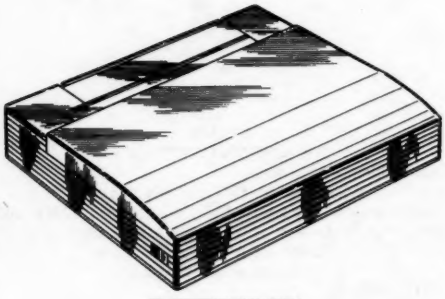
323,342
INK RIBBON CARTRIDGE
Mario Bellini, Milan, Italy
Filed Mar. 28, 1984, Ser. No. 594,271
Claims priority, application Italy, Sep. 29, 1983, 53761/83[U]
The portion of the term of this patent subsequent to Aug. 21, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—12



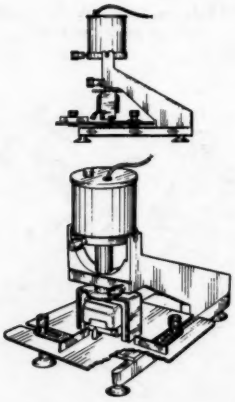
323,343
COMPUTERIZED ENGRAVING MACHINE
William A. Richardson, Berkeley Heights, and Frank Zimmerman, Hiawatha, both of N.J., assignors to Xenetech USA, Inc., Baton Rouge, La.
Filed Feb. 24, 1988, Ser. No. 159,646
Term of patent 14 years
U.S. Cl. D18—50



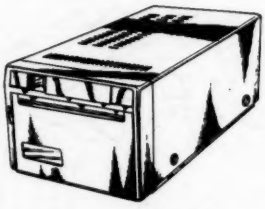
323,344
PRINTER FOR ELECTRONIC COMPUTER
Toshio Umino, and Hiroyuki Tokuda, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 14, 1990, Ser. No. 493,378
Claims priority, application Japan, Sep. 14, 1989, 1-33782
Term of patent 14 years
U.S. Cl. D18—54



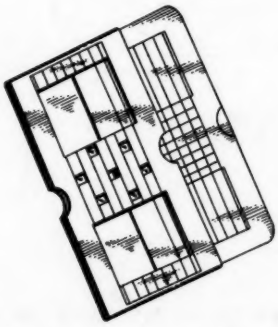
323,345
NUMBERING MACHINE
Daniel Vaccaro, 32 Doran Ct., Chula Vista, Calif. 92010
Filed Oct. 2, 1987, Ser. No. 103,793
Term of patent 14 years
U.S. Cl. D18—14



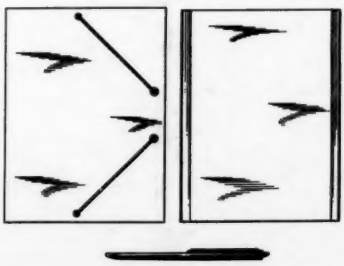
323,346
VIDEO IMAGING PRINTER OR THE LIKE
Takuo Yoshitani; Eiichi Kamiya; Hitoshi Sawada; Toshiaki Kikuta, and Yoshihito Nakahara, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 23, 1990, Ser. No. 601,584
Claims priority, application Japan, Apr. 25, 1990, 2-14173
Term of patent 14 years
U.S. Cl. D18—36



323,347
PERPETUAL CALENDAR
Marcelo Vlassich, Av. Mitre 5980, Wilde, Prov. Buenos Aires, Argentina 1875
Filed Jan. 4, 1990, Ser. No. 460,730
Claims priority, application Argentina, Aug. 8, 1989, 55.321
Term of patent 14 years
U.S. Cl. D19—25



323,348
STATIONARY FOLDER OR THE LIKE
Tracey Tooker, 18 Mercer St., New York, N.Y. 10013
Filed Mar. 30, 1988, Ser. No. 175,133
Term of patent 14 years
U.S. Cl. D19—26



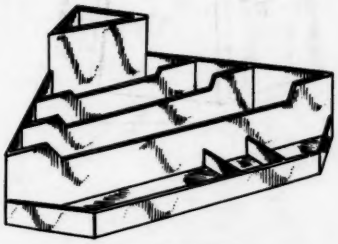
323,349
PEN
Francine Gomez, Rueil Malmaison, France, assignor to Waterman S.A., Paris, France
Filed Jan. 6, 1989, Ser. No. 294,495
Claims priority, application France, Aug. 12, 1988, 885170
Term of patent 14 years
U.S. Cl. D19—49

323,350
PEN
Ake Johansson, Mellby, Sweden, assignor to Vest Nova AB, Stomstad, Sweden
Filed Oct. 13, 1989, Ser. No. 421,456
Term of patent 14 years
U.S. Cl. D19—49

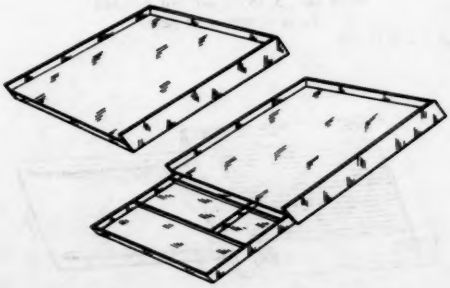
323,351
VIDEO TRAINING DEVICE
George M. Bulow, New York, N.Y.; Robert B. Staubitz, Collinsville, and Robert H. Bruno, Avon, both of Conn., assignors to Interactive International, Inc., New York, N.Y.
Filed Jan. 5, 1990, Ser. No. 461,433
Term of patent 14 years
U.S. Cl. D19—62

323,352
CONTAINER FOR MAGNETIZABLE ARTICLES
Hans Halm, Herne, Fed. Rep. of Germany, assignor to arlac-Werk Heiko Ippen GmbH & Co., Hamburg, Fed. Rep. of Germany
Filed Feb. 29, 1988, Ser. No. 161,848
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1987, 66AR2224/87
Term of patent 14 years
U.S. Cl. D19—75

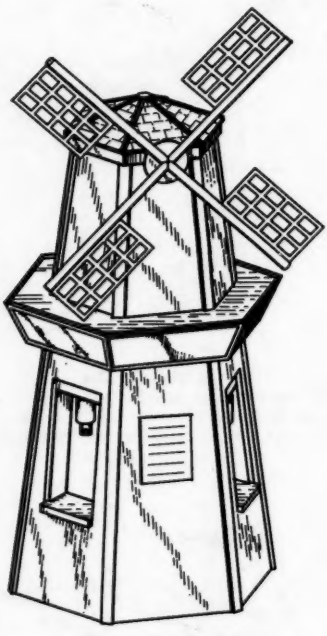
323,353
DESK ORGANIZER
Michael J. Wagner, Carol Stream, Ill., assignor to Sanford Corporation, Bellwood, Ill.
Filed Oct. 10, 1989, Ser. No. 420,131
Term of patent 14 years
U.S. Cl. D19—75



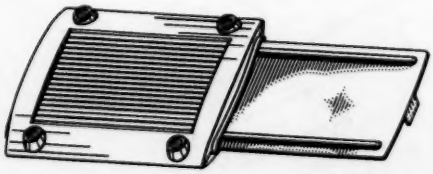
323,354
COMBINED PAPER TRAY AND STORAGE DRAWER
Rinaldo Nava, Milan, Italy, assignor to Nava Milano S.p.A., Milan, Italy
Filed Jul. 24, 1989, Ser. No. 384,518
Claims priority, application Italy, Jan. 25, 1989, 20479/89[U]
Term of patent 14 years
U.S. Cl. D19—78



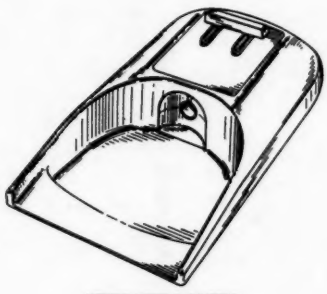
323,355
COIN OPERATED PURIFIED WATER DISPENSING STATION
Donald P. Dolifka, 13293 Brighton Rd., Brighton, Colo. 80601
Filed Oct. 2, 1989, Ser. No. 415,521
Term of patent 14 years
U.S. Cl. D20—3



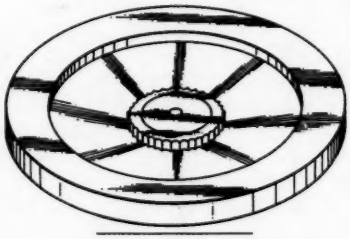
323,356
SLIDEABLE DISPLAY SIGN
James Hofman, Lake Bluff, Ill., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Dec. 3, 1990, Ser. No. 622,811
Term of patent 14 years
U.S. Cl. D20—40



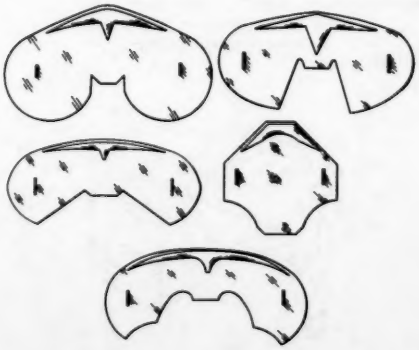
323,357
GOLF PUTTING PRACTICE TARGET
Douglas J. Mulay, Roselle, Ill., assignor to Mulay Plastics, Inc., Addison, Ill.
Filed Jul. 17, 1989, Ser. No. 380,795
Term of patent 14 years
U.S. Cl. D21—8



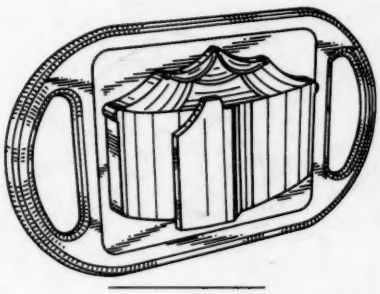
323,358
GAME
Tom E. Workman, 4000 Rock Creek Dr., Dallas, Tex. 75204
Filed Mar. 29, 1989, Ser. No. 330,868
Term of patent 14 years
U.S. Cl. D21—40



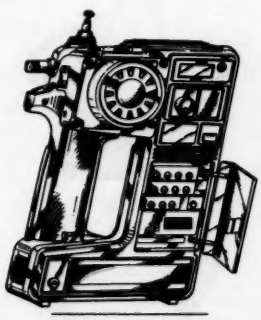
323,359
AERIAL TOY
Harold J. Rose; Bonnie Maginnis, and Nicholas Maginnis, all of 1401 St. James Ct., Apt. 4, Louisville, Ky. 40208
Filed Nov. 28, 1989, Ser. No. 442,561
Term of patent 14 years
U.S. Cl. D21—89



323,360
PUZZLE TOY
Nancy D. Slayton, Cumberland, R.I., assignor to Dart Industries, Inc., Deerfield, Ill.
Filed Jul. 31, 1989, Ser. No. 387,685
Term of patent 14 years
U.S. Cl. D21—105



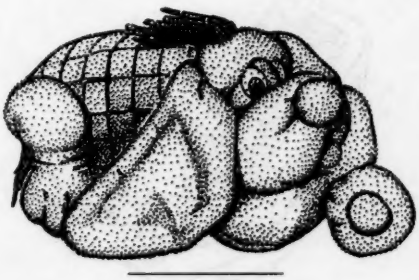
323,361
REMOTE CONTROL UNIT
Naoichi Kohno, Mobara, Japan, assignor to Futaba Denshi Kogyo Kabushiki Kaisha, Mobara, Japan
Filed Apr. 19, 1988, Ser. No. 183,166
Claims priority, application Japan, Feb. 24, 1988, 63-6999
Term of patent 14 years
U.S. Cl. D21—142



323,362
NOVELTY FIGURE
John M. Williams, 1544 Sawdust Rd., Ste. 200, The Woodlands, Tex. 77380
Filed Sep. 5, 1989, Ser. No. 402,253
Term of patent 14 years
U.S. Cl. D21—149

323,363
SEATBELT ATTACHABLE COMBINED STUFFED TOY FIGURE AND KEEPER
James R. Ely, 1811 I St., Sparks, Nev. 89431
Filed Dec. 6, 1988, Ser. No. 280,540
Term of patent 14 years
U.S. Cl. D21—159

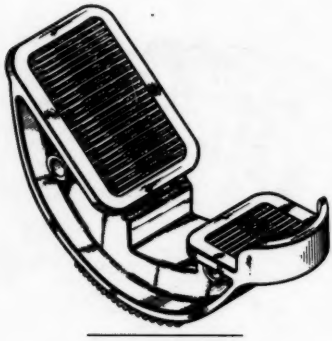
323,364
TOY DOG FIGURE
John M. Williams, 1544 Sawdust Rd., Ste. 200, The Woodlands, Tex. 77380
Filed Sep. 5, 1989, Ser. No. 402,262
Term of patent 14 years
U.S. Cl. D21—161



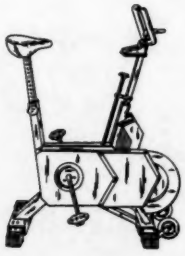
323,365
TOY STUFFED RABBIT FIGURE
Laurie D. Wyeth, 123 Quail Creek Dr., San Marcos, Tex. 78666
Continuation-in-part of Ser. No. 65,003, Jun. 19, 1987, Pat. No. Des. 313,825. This application Jun. 17, 1988, Ser. No. 208,408
Term of patent 14 years
U.S. Cl. D21—187

323,366
TOY ANIMAL FIGURE
Catherine M. Senitt, R.R. #1, Carnarvon, Ontario, Canada K0M 1J0
Filed Jul. 12, 1989, Ser. No. 379,442
Term of patent 14 years
U.S. Cl. D21—188

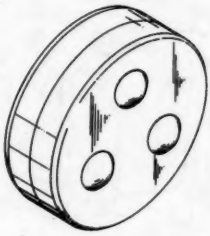
323,367
ROCKING LEG EXERCISER
Christopher J. B. Smith, IV, Oceanport, N.J., assignor to Prostretch, Inc., Long Branch, N.J.
Filed Feb. 8, 1990, Ser. No. 476,672
Term of patent 14 years
U.S. Cl. D21—191



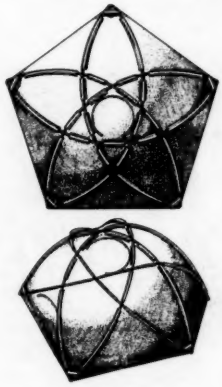
323,368
ERGOMETER
J. Warren Whitesel, Varberg, Sweden, assignor to Monark AB, Sweden
Filed Feb. 5, 1987, Ser. No. 11,139
Term of patent 14 years
U.S. Cl. D21—194



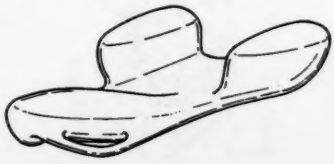
323,369
HOCKEY PUCK
Anthony De Masi, Jr., and John A. McMahon, 3rd, both of West Hartford, Conn., assignors to Roll-A-Puck Limited, Simsbury, Conn.
Filed Sep. 3, 1987, Ser. No. 92,463
Term of patent 14 years
U.S. Cl. D21—203



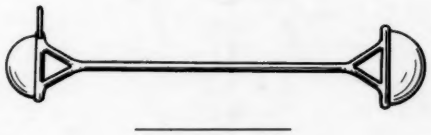
323,370
TENT
Charles D. Bryant, Rockport, Me., assignor to Moss, Inc., Camden, Me.
Filed Dec. 28, 1989, Ser. No. 458,976
Term of patent 14 years
U.S. Cl. D21—253



323,371
FLOATING BOARD FOR SWIMMING OR THE LIKE
Hideaki Ohtaka, Kawada Housing 300-2-3, 3-2536 Kawada, Mito-shi, Ibaraki-ken, Japan
Filed Dec. 31, 1990, Ser. No. 636,431
Claims priority, application Japan, Jul. 2, 1990, 2-22133
Term of patent 14 years
U.S. Cl. D21—237



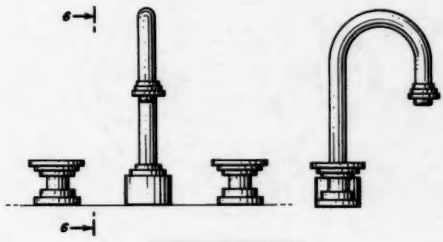
323,372
RIFLE SCOPE COVER
William L. Heckerman, P.O. Box 429, Bozeman, Mont.
Filed Dec. 4, 1986, Ser. No. 938,739
Term of patent 14 years
U.S. Cl. D22—108



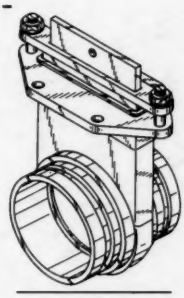
323,373
REEL SEAT FOR FISHING ROD
Toyoji Umeda, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Aug. 16, 1989, Ser. No. 394,482
Claims priority, application Japan, Feb. 17, 1989, 1-5843; Apr. 19, 1989, 1-14531
Term of patent 14 years
U.S. Cl. D22—142

323,374
FISH LANDING SNARE
C. Phillip Everett, 206 W. Kensington, Astoria, Oreg. 97103
Filed Oct. 12, 1989, Ser. No. 420,220
Term of patent 14 years
U.S. Cl. D22—134

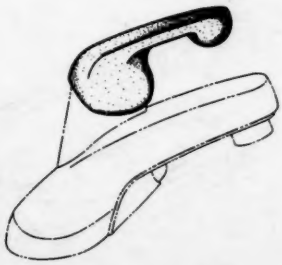
323,375
FAUCET SET
Regina Razumov, San Diego, Calif., assignor to Harden Industries, Inc., Los Angeles, Calif.
Filed Jan. 22, 1988, Ser. No. 146,786
Term of patent 14 years
U.S. Cl. D23—242



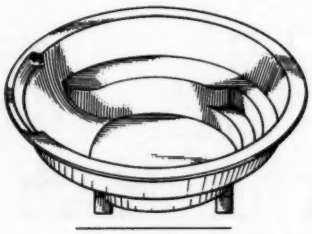
323,376
KNIFE GATE VALVE
Masaharu Fukuchi, Shiga, Japan, assignor to Okumura Engineering Works Co., Ltd., Shiga, Japan
Filed Sep. 30, 1988, Ser. No. 252,360
Term of patent 14 years
U.S. Cl. D23—244



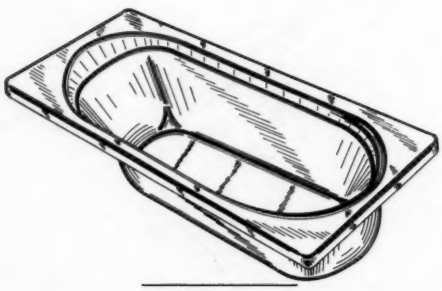
323,377
HANDLE FOR A FAUCET OR THE LIKE
Andreas Haug; Thomas W. Schönherr, both of Stuttgart, Fed. Rep. of Germany; Loran R. Hill, Indianapolis, Ind., and José Delhaes, Altensteig, Fed. Rep. of Germany, assignors to Masco Corporation of Indiana, Taylor, Mich.
Filed Feb. 2, 1989, Ser. No. 305,992
Term of patent 14 years
U.S. Cl. D23—252



323,378
BATH TUB
Jean-Claude Delepine, 23, rue Clapeyron, 75008 Paris, France
Filed Jan. 18, 1989, Ser. No. 298,008
Claims priority, application Hague, Aug. 3, 1988, DM/011490
Term of patent 14 years
U.S. Cl. D23—281



323,379
BATHTUB
Henry M. Stairs, Jr., Ligonier, Pa., assignor to American Standard Inc., New York, N.Y.
Filed Apr. 17, 1989, Ser. No. 339,432
Term of patent 14 years
U.S. Cl. D23—281

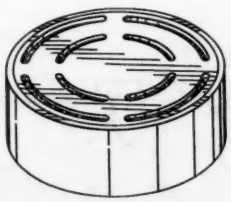


323,380
BATHTUB
Henry M. Stairs, Jr., Ligonier, Pa., assignor to American Standard Inc., New York, N.Y.
Filed Jun. 14, 1989, Ser. No. 365,981
The portion of the term of this patent subsequent to Jan. 21, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—281

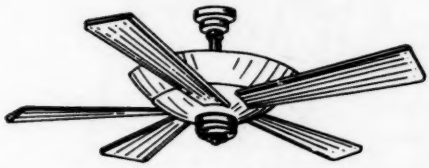
323,381
WATER CLOSET TANK
William C. McKeone, and Mark A. Zmuda, both of Sheboygan, Wis., assignors to Kohler Co., Kohler, Wis.
Filed Jan. 17, 1990, Ser. No. 466,574
Term of patent 14 years
U.S. Cl. D23—313

323,382
HEATER FAN
Jui-shang Wang, Taipei, Taiwan, assignor to Duracraft Corp., Sudbury, Mass.
Filed Mar. 13, 1989, Ser. No. 322,711
Term of patent 14 years
U.S. Cl. D23—335

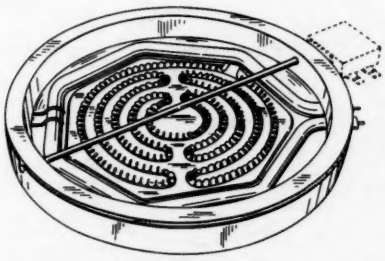
323,383
ATHLETIC BAG DEODERIZER CONTAINER
Jerome A. Keays, R.R. #1, Claremont, Pickering, Ontario, Canada L0H 1E0 , and Randolph J. Smith, 84-24 Fundy Bay Blvd., Agincourt, Ontario, Canada M1W 3A4
Filed Dec. 16, 1988, Ser. No. 285,889
Claims priority, application Canada, Nov. 3, 1988, 3-11-88-5
Term of patent 14 years
U.S. Cl. D23—366



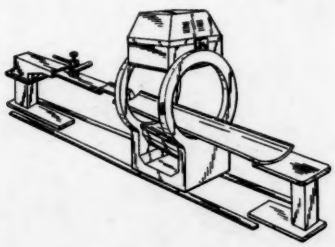
323,384
CEILING FAN
Jean C. Mason, Hollywood, Calif., assignor to Casablanca Fan Company, Inc., City of Industry, Calif.
Filed Sep. 6, 1988, Ser. No. 241,131
Term of patent 14 years
U.S. Cl. D23—377



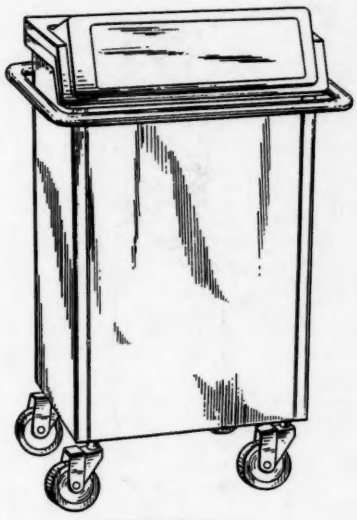
323,385
RADIANT STOVE HEATER
George A. Higgins, Hagley, and Kevin R. McWilliams, Stratford-upon-Avon, both of England, assignors to Ceramaspeed Limited, Worcestershire, United Kingdom
Filed Jul. 31, 1990, Ser. No. 560,970
Claims priority, application United Kingdom, Feb. 10, 1990, 2004619
Term of patent 14 years
U.S. Cl. D23—419



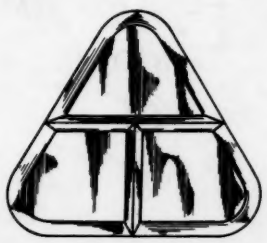
323,386
GANTRY FOR A MEDICAL CAMERA
Allan J. Perusek, Mentor, Ohio, assignor to Adac Laboratories, Milpitas, Calif.
Filed Jan. 19, 1988, Ser. No. 145,181
Term of patent 14 years
U.S. Cl. D24—159



323,387
LASER THERAPY UNIT
Alexander Neumeister, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany
Filed May 4, 1987, Ser. No. 46,416
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1986, MR 16 978
Term of patent 14 years
U.S. Cl. D24—170



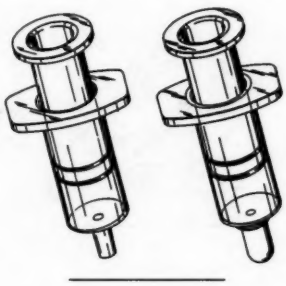
323,388
TABLET
John W. Becker, Littleton, Colo., assignor to Akzo N.V., Arnhem, Netherlands
Continuation of Ser. No. 416,902, Oct. 4, 1989, Pat. No. 5,009,896. This application May 9, 1990, Ser. No. 521,469
Term of patent 14 years
U.S. Cl. D24—103



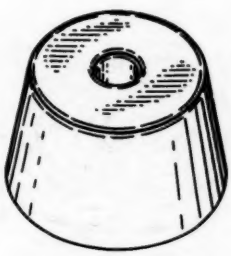
323,389
MEDICAL FLUID CONTAINER
Osamu Aoki, Osaka; Kiyonori Okada; Seizo Sunago, both of Toyonaka; Hitoshi Futagawa, Otsu; Kohji Ikeda, and Shuji Hasegawa, both of Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan
Filed Apr. 14, 1989, Ser. No. 338,125
Claims priority, application Japan, Oct. 17, 1988, 63-40744
Term of patent 14 years
U.S. Cl. D24—118

323,390
SECURITY CLIP FOR JOINING A FEED LINE TO A CANNULA
Donald A. Paine; Virginia G. Paine, both of P.O. Box 394, Westmoreland, N.H. 03467, and John R. Bookwalter, R.D. 3, Box 120, Putney, Vt. 05346
Filed Aug. 8, 1989, Ser. No. 390,845
Term of patent 14 years
U.S. Cl. D24—129

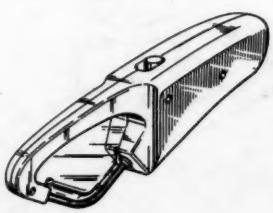
323,391
DISPOSABLE SYRINGE HOUSING
John B. Payne, West Des Moines, Iowa, and David R. Jones, West Palm Beach, Fla., assignors to Diamond Scientific Co., Des Moines, Iowa
Filed May 10, 1988, Ser. No. 192,781
Term of patent 14 years
U.S. Cl. D24—130



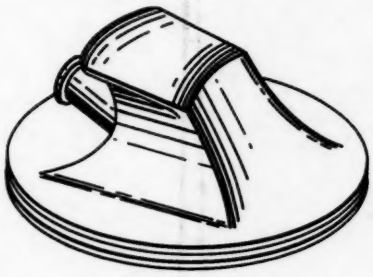
323,392
SAFETY RECAPPER FOR HYPODERMIC NEEDLES
Harold J. Byrne, 1006 NE. Second Ave., Portland, Oreg. 97232
Filed Jul. 31, 1989, Ser. No. 386,866
Term of patent 14 years
U.S. Cl. D24—130



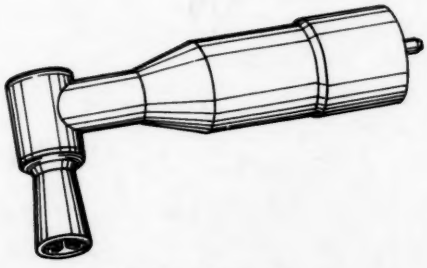
323,393
DEPILATOR
Joseph Gross, Moshav Mazor, Israel, assignor to Hair Remover, Ltd., Tel-Aviv, Israel
Filed Jul. 25, 1988, Ser. No. 223,806
Claims priority, application Israel, Feb. 3, 1988, 13406
Term of patent 14 years
U.S. Cl. D24—133



323,394
STETHOSCOPE CHESTPIECE
Jane W. Casto, Somerset, Wis., and Curtis A. Hostager, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jul. 28, 1989, Ser. No. 387,095
Term of patent 14 years
U.S. Cl. D24—134

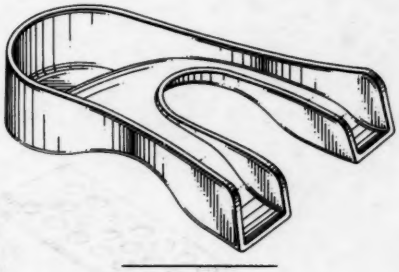


323,395
RIGHT ANGLE DENTAL HANDPIECE
Moshe Meller, 175 Oberlin Ave., Lakewood, N.J. 08701, and Michael Feldman, Howell, N.J., assignors to Moshe Meller, Lakewood, N.J.
Filed Mar. 30, 1990, Ser. No. 502,498
Term of patent 14 years
U.S. Cl. D24—146

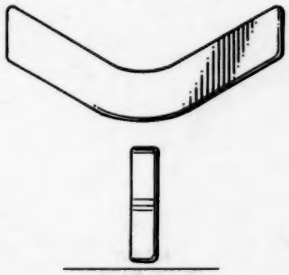


323,396
TONGUE POSITIONER
Michael K. Diamond, 86 Millburn La., East Hills, N.Y. 11576
Filed Jan. 30, 1989, Ser. No. 303,899
Term of patent 14 years
U.S. Cl. D24—180

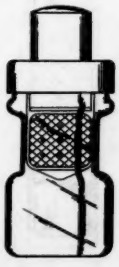
323,397
DENTAL IMPRESSION TRAY FOR SMALL ANIMALS
Lloyd J. Mann, 2040 S. 327th La., #DD201, Federal Way, Wash. 98003
Filed Jul. 24, 1990, Ser. No. 556,974
Term of patent 14 years
U.S. Cl. D24—181



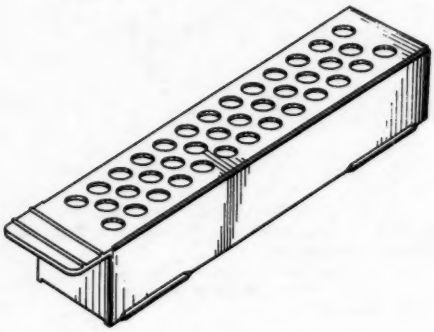
323,398
MALE SCROTUM SUPPORT MEANS
Gregory C. Simmons, Shelburne, Vt., assignor to Tytan Support Wear, Colchester, Vt.
Filed Jun. 8, 1988, Ser. No. 204,413
Term of patent 14 years
U.S. Cl. D24—190



323,399
CULTURE BOTTLE
Lester L. Leno, Boring, Oreg., assignor to Definitive Diagnostics, Inc., Tualatin, Oreg.
Filed Aug. 3, 1989, Ser. No. 389,782
Term of patent 14 years
U.S. Cl. D24—224



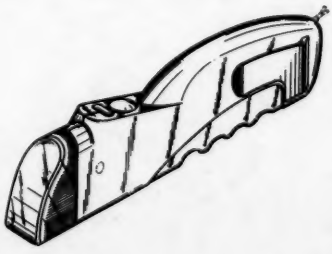
323,400
PIPETTE TIP HOLDER OR SIMILAR ARTICLE
Dina Frenkel, Plano, Tex.; Fareed Kureshy, Westwood, Mass., and William J. Lawrence, Garland, Tex., assignors to PB Diagnostic Systems, Inc., Westwood, Mass.
Filed Jul. 24, 1989, Ser. No. 384,457
Term of patent 14 years
U.S. Cl. D24—230



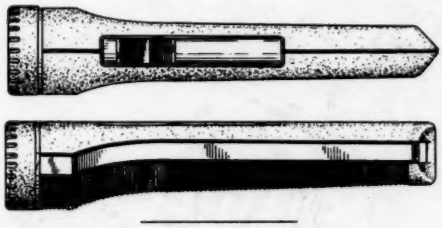
323,401
DOOR PANEL
Robert W. Mickle, 9030 Markville Dr., Apt. 2533, Dallas, Tex. 75243
Filed Oct. 24, 1988, Ser. No. 261,189
Term of patent 14 years
U.S. Cl. D25—48

323,402
BALUSTER
Lewis F. Fitts, Tuscaloosa, Ala., assignor to Fitts Industries, Inc., Tuscalossa, Ala.
Filed Jun. 21, 1988, Ser. No. 209,355
Term of patent 14 years
U.S. Cl. D25—126

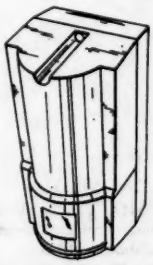
323,403
COMBINED AUDIBLE ALARM AND FLASHLIGHT
Harold S. Sinrod, Potomac, Md., assignor to Loud-Stik Corp., Gulf Breeze, Fla.
Filed May 1, 1990, Ser. No. 517,593
Term of patent 14 years
U.S. Cl. D26—38



323,404
FLASHLIGHT
Kenneth Fenne, 3 S. 220 Park Blvd., Glen Ellyn, Ill. 60137
Filed Feb. 27, 1989, Ser. No. 315,773
Term of patent 14 years
U.S. Cl. D26—49

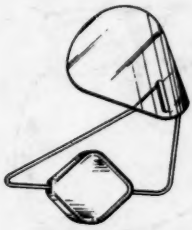


323,405
COMBINED WALL MOUNTED SECURITY LIGHT AND LIGHT ACTIVATING INFRARED MOTION SENSOR
Eric L. W. Kin, Shaukeiwan Centre, Hong Kong, assignor to Oriental Marketing Services Limited, Tsimshatsui, Hong Kong
Filed Jul. 13, 1989, Ser. No. 379,450
Claims priority, application United Kingdom, Feb. 21, 1989, 1057322
Term of patent 14 years
U.S. Cl. D26—51



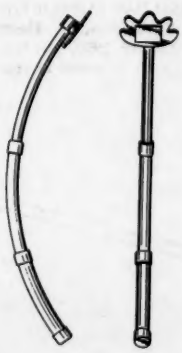
323,406
OUTDOOR LIGHT
Francis B. Fisher, Newark, Ohio, assignor to Maidware Products, Inc., Hebron, Ohio
Filed Feb. 8, 1989, Ser. No. 308,692
Term of patent 14 years
U.S. Cl. D26—68

323,407
WALL LAMP
Luciano Pagani, Milan, Italy, assignor to Flos S.p.A., Brescia, Italy
Filed Aug. 30, 1988, Ser. No. 238,875
Claims priority, application Italy, Mar. 1, 1988, 6943/88[U]
Term of patent 14 years
U.S. Cl. D26—87



323,408
ADJUSTABLE LANTERN HOLDER
Kenneth W. Butler, 4376 Ecton Rd., Winchester, Ky. 40391
Filed Feb. 8, 1990, Ser. No. 476,647
Term of patent 14 years
U.S. Cl. D26—138

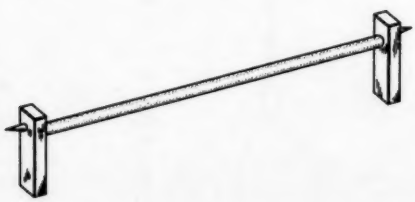
323,409
LOTION APPLICATOR
Shane M. Giese, 2940 Meadow Green, Dallas, Tex. 75234
Filed Sep. 25, 1989, Ser. No. 411,592
Term of patent 14 years
U.S. Cl. D28—7



323,410
FACE SHIELD
Zhimon Jacobson, 25 Broadlawn Dr., Newton, Mass. 02167
Filed Aug. 25, 1989, Ser. No. 398,760
Term of patent 14 years
U.S. Cl. D29—8

323,411
TREADLE ACTUATED PET DISH OR SIMILAR ARTICLE
David E. Oathout, Rte. 10, Box 48A, Caroga Lake, N.Y. 12032
Filed Oct. 16, 1989, Ser. No. 421,687
Term of patent 14 years
U.S. Cl. D30—130

323,412
TRASH BAG SUPPORT FRAME
James K. Hoge, 110 Walnut St., W. Hempstead, N.Y. 11552
Filed Aug. 17, 1990, Ser. No. 569,167
Term of patent 14 years
U.S. Cl. D34—6



323,413
FISHING EQUIPMENT CARRYING CART
Richard A. Miller, 5134 Valley Stream Rd., Charlotte, N.C. 28209
Filed Aug. 24, 1990, Ser. No. 572,025
Term of patent 14 years
U.S. Cl. D34—26

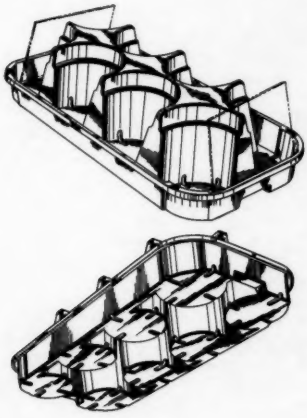
323,414
SECTION OF A SHAFTLESS SPIRAL CONVEYOR
Richard L. Bruke, Bunkeflostrand, Sweden, assignor to Spirac Engineering AB, Malmo, Sweden
Filed May 10, 1989, Ser. No. 350,023
Claims priority, application Sweden, Nov. 10, 1986, 88-2561
Term of patent 14 years
U.S. Cl. D34—29

323,415

TRAY FOR PLANT POTS OR THE LIKE

Ronald G. Iverson, Algonquin, Ill., assignor to Iverson Perennial Gardens, Inc., Long Grove, Ill.

Filed Jul. 17, 1989, Ser. No. 380,658
Term of patent 14 years
U.S. Cl. D34—46

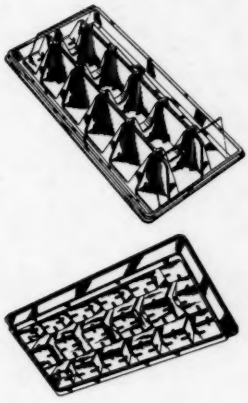


323,416

TRAY FOR PLANT POTS OR THE LIKE

Ronald G. Iverson, Algonquin, Ill., assignor to Iverson Perennial Gardens, Inc., Long Grove, Ill.

Filed Jul. 17, 1989, Ser. No. 380,659
Term of patent 14 years
U.S. Cl. D34—46



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF JANUARY, 1992

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See*—
Ollila, Harry, 5,081,938, Cl. 110-269.000.

ABB Power T&D Company: *See*—
Kennon, Jerry M.; and Via, Ronald B., 5,082,369, Cl. 356-243.000.

ABB Process Automation Inc.: *See*—
Burk, Gary N., 5,082,529, Cl. 162-198.000.

ABB Stal AB: *See*—
Ekbom, Ragnar, 5,082,623, Cl. 419-8.000.

Abbott Laboratories: *See*—
Hui, Ho-Wah; Hsu, Chung-Chiang; and Vadnere, Madhu K., 5,082,656, Cl. 514-24.000.
Olichney, Michael D., 5,082,014, Cl. 137-1.000.
Van Scoik, Kurt G., 5,082,667, Cl. 424-469.000.

Abe, Hiraku; Suzuki, Hidemasa; Tokunaga, Ichiro; and Ogawa, Yasuaki, to Alps Electric Co., Ltd. Methods for assembling and adjusting a magnetic encoder device. 5,081,756, Cl. 29-593.000.

Abe, Hiroshi, to Asahi Seiko Kabushiki Kaisha. Apparatus for accepting two kinds of coins. 5,082,099, Cl. 194-338.000.

Abe, Masaru; Kawai, Yoichi; and Hoshino, Minoru, to Mitsui Toatsu Chemicals, Inc. Polypropylene resin composition having high dielectric strength. 5,082,888, Cl. 524-449.000.

Abiko, Toshio: *See*—
Kanda, Minoru; Komatsu, Mikio; Nunoya, Hidetsugu; Fujii, Yasuhiro; and Abiko, Toshio, 5,083,132, Cl. 343-700.0MS.

Abukawa, Toshimi: *See*—
Tomite, Tosio; Nakatsugawa, Keiichi; and Abukawa, Toshimi, 5,083,054, Cl. 310-154.000.

Abuyama, Yasuo, to Kabushiki Kaisha Toshiba. Image forming apparatus for forming an image according to magnification. 5,083,216, Cl. 358-451.000.

Acciaierie Weissenfels S.p.A.: *See*—
Franklin, Charles R., 5,082,039, Cl. 152-241.000.

Accubilt, Inc.: *See*—
Poupard, Mark D.; and Cooper, Edward L., 5,083,070, Cl. 318-568.100.

Achille, Felix: *See*—
Walles, Wilhelm E.; Achille, Felix; Fiero, Terry H.; Gregory, Steve D.; Kirch, Timothy O.; and Stevens, Bradley D., 5,082,740, Cl. 428-461.000.

Acme Manufacturing: *See*—
Carlson, Don F., 5,081,797, Cl. 51-206.500.

Actel Corporation: *See*—
El-Ayat, Khaled A.; and Chang, Jia-Hwang, 5,083,083, Cl. 324-158.00R.

Acton, Elizabeth; Cargill, Alexander M.; Ross, Colin F.; and Eatwell, Graham P., to Rolls-Royce plc. Active control of unsteady motion phenomena in turbomachinery. 5,082,421, Cl. 415-118.000.

Ad-Va-Cote Tri-State Inc.: *See*—
Raevsky, Vitaly; Zlatkevich, Lev Y.; and Brown, Robert D., 5,082,877, Cl. 523-179.000.

Adachi, Hiroyuki: *See*—
Kusaka, Kensaku; Suzuki, Yoshihiko; Kimura, Shigeo; Hosoi, Atsushi; Adachi, Hiroyuki; and Kinoshita, Masahide, 5,083,168, Cl. 355-285.000.

Adams, Billy L. Method and apparatus for handling salmon eggs. 5,081,787, Cl. 43-55.000.

Adams, Earl B.; Anderson, Robert K.; and Diwan, Rajive K., to Du Pont de Nemours, E. I., and Company. Process for spinning and drawing monofilaments with high tenacity and high tensile uniformity. 5,082,611, Cl. 264-129.000.

Adams, Steven P.: *See*—
Heuckeroth, Robert O.; Adams, Steven P.; Gordon, Jeffrey I.; and Gokel, George W., 5,082,967, Cl. 562-512.000.

Adell, Loren S., to Adell, Loren S.; and Adell, Michael. Multi-laminar mouthguards. 5,082,007, Cl. 128-861.000.

Adell, Michael: *See*—
Adell, Loren S., 5,082,007, Cl. 128-861.000.

Adger Kogyo Co., Ltd.: *See*—
Iijima, Zenshiro, 5,082,495, Cl. 106-21.000.

Adhesives Research, Inc.: *See*—
Glackin, Richard T., 5,082,595, Cl. 252-511.000.

Adler, Richard J.; and Nylander, R. Fred, to Varian Associates, Inc. Circuit for coupling energy to pulse forming network or capacitor. 5,083,093, Cl. 328-65.000.

Advanced Environmental Recycling Technologies, Inc.: *See*—
Brooks, Joe G.; Goforth, Billy D.; and Goforth, Charles L., 5,082,605, Cl. 264-40.600.

Advanced Interconnection Technology, Inc.: *See*—
Fox, James M.; and Malone, Howard F., 5,083,087, Cl. 324-537.000.

Advanced Micro Devices, Inc.: *See*—
Plants, William C., 5,083,079, Cl. 323-313.000.

Aerodyne Controls Corporation: *See*—
Tetrault, Leonard P., 5,082,019, Cl. 137-505.380.

Aerospace Preforms Limited: *See*—
Lawton, Peter G.; and Smith, Norman, 5,081,754, Cl. 29-419.100.

Aerovironment, Inc.: *See*—
Lissaman, Peter B. S.; Drees, Herman M.; Sink, Charles J.; and Watson, William D., 5,082,079, Cl. 180-118.000.

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Chapman, Russell R., 5,082,679, Cl. 426-312.000.

Agarwala, Neena: *See*—
Snipes, Wallace C.; and Agarwala, Neena, 5,082,655, Cl. 424-386.000.

Agency for Industrial Science and Technology, extra-ministerial bureau of Ministry of International Trade and Industry, Japan: *See*—
Aizawa, Junichi; Omata, Yasushi; Shimoyama, Tatsuo; and Kodama, Kakuichi, 5,082,296, Cl. 277-204.000.

Agency of Industrial Science & Technology, Ministry of International Trade & Industry: *See*—
Hayashi, Yutaka; Sato, Masaaki; Muramatsu, Yuji; Yoshihara, Hirofumi; and Hasegawa, Teiji, 5,083,185, Cl. 357-38.000.

AGFA-Gevaert, N.V.: *See*—
Uytterhoeven, Herman J.; and Van Thillo, Etienne A., 5,082,822, Cl. 503-227.000.
Vanmaele, Luc J.; and Janssens, Wilhelmus, 5,082,823, Cl. 503-227.000.

Aginfor AG fur Industrielle Forschung: *See*—
Guttinger, Heinrich, 5,082,430, Cl. 418-55.200.

Agostinelli, John A.; Hung, Liang-sun; and Mir, Jose M., to Eastman Kodak Company. Processes of forming Ag doped conductive crystalline bismuth mixed alkaline earth copper oxide films. 5,082,688, Cl. 427-126.300.

Agreda, Victor H.: *See*—
Yount, Thomas L.; Mayfield, George G.; and Agreda, Victor H., 5,082,982, Cl. 570-203.000.

Ahn, Duk S.; Lee, Jae R.; and Park, Chan S., to Pohang Iron & Steel Co., Ltd.; and Research Institute of Industrial Science & Technology. Fe-Mn alloy plated steel sheet and manufacturing method thereof. 5,082,748, Cl. 428-656.000.

Ahola, Billy J.: *See*—
Bastian, John M.; and Ahola, Billy J., 5,081,808, Cl. 52-220.000.

Ahrens, Richard. Window alarm system. 5,083,110, Cl. 340-541.000.

Air Products and Chemicals, Inc.: *See*—
Allam, Rodney J.; and Topham, Anthony, 5,081,845, Cl. 62-24.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Nishii, Michiharu, 5,081,841, Cl. 60-56.000.

Aizawa, Junichi; Omata, Yasushi; Shimoyama, Tatsuo; and Kodama, Kakuichi, to Agency for Industrial Science and Technology, extra-ministerial bureau of Ministry of International Trade and Industry, Japan. Spiral wound gasket and fabrication method thereof. 5,082,296, Cl. 277-204.000.

Ajiki, Yoshio: *See*—
Inoue, Kazuo; Ajiki, Yoshio; and Sono, Hiroshi, 5,081,971, Cl. 123-308.000.

Akagawa, Tomohiro: *See*—
Ueno, Kouhei; Akagawa, Tomohiko; and Obana, Kazuyoshi, 5,082,646, Cl. 423-554.000.

Akai, Norio: *See*—
Miyake, Akira; Akai, Norio; and Taniguchi, Tomizo, 5,082,728, Cl. 428-329.000.

Akao, Mutsuo; and Komatsu, Takuichi, to Fuji Photo Film Co., Ltd. Process for producing chemical analytical slide. 5,082,516, Cl. 156-277.000.

Akao, Mutsuo; and Inoue, Koji, to Fuji Photo Film Co., Ltd. Packaging materials. 5,082,744, Cl. 428-522.000.

Akaoka, Kenkichi: *See*—
Satoh, Takateru; Tanaka, Kimio; Shiba, Haruo; Uemura, Noboru; and Akaoka, Kenkichi, 5,082,197, Cl. 242-199.000.

Akasaka, Nobuhiro; Zakoh, Toshiaki; Yamanishi, Toru; Katsurashima, Wataru; and Ogasawara, Ichiro, to Sumitomo Electric Industries, Ltd. Tape-like coated optical fiber. 5,082,347, Cl. 385-114.000.

Akasaki, Ichimoto: *See*—
Saeki, Koichiro; Nagaoka, Koji; and Akasaki, Ichimoto, 5,082,881, Cl. 523-511.000.

Akazawa, Tadashi: *See*—
Ito, Yukio; Akazawa, Tadashi; and Noguchi, Takao, 5,081,858, Cl. 72-43.000.

Akiyama, Katsuji, to Atsugi Unisia Corp. Cooling arrangement for piston head of internal combustion engine. 5,081,959, Cl. 123-41.350.

Akou, Masayuki: *See*—
Fukuda, Hiroya; Akou, Masayuki; Sawa, Eiji; and Ohashi, Takashi, 5,082,870, Cl. 521-159.000.

Aktiebolaget Electrolux: *See—*
Schiller, Mikael A. W.; Melin, Per A.; and Edlund, Leif E., 5,081,738, Cl. 15-339.000.

Aktiebolaget Profor: *See—*
Nedstedt, Ulf, 5,081,820, Cl. 53-456.000.

Akzo N.V.: *See—*
Ranson, Janet H., 5,082,657, Cl. 424-85.100.
Van den Oetelaar, Petrus J. M.; and Mentink, Maria M. F., 5,082,864, Cl. 514-646.000.

Al-Samadi, Riad A.; and Li Kwok Cheong, Cheung K., to Chemetics International Company, Ltd. Waste acid recovery process. 5,082,645, Cl. 423-531.000.

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Singletary, David B.; and Malone, Larry W., 5,081,814, Cl. 52-670.000.

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Horn, Edward R.; Hopkinson, Derek; and Allen, Michael C., 5,081,904, Cl. 91-420.000.

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Alband, Todd D., to Minnesota Mining and Manufacturing Company. Tamper-indicating tape. 5,082,702, Cl. 428-36.920.

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Rawlings, John P.; and Albertson, Michael E., 5,081,848, Cl. 62-260.000.

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Alcan International Limited: *See—*
Hachey, Raynald; Lamarre, Daniel; and Marcotte, Jacques, 5,081,869, Cl. 73-25.030.

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Beylat, Jean-Luc; Pitel, Fabrice; and Monnot, Michel, 5,082,376, Cl. 385-3.000.

Alexander, Robert R.: *See—*
Sandford, Reginald E.; and Alexander, Robert R., 5,081,734, Cl. 15-93.100.

Alexandrovich, Peter S.; Derimiggio, John E.; and Wilson, John C., to Eastman Kodak Company. Reduced viscosity polyblends of polyester and epoxy resins. 5,082,883, Cl. 524-109.000.

Alexandru, Lupu: *See—*
Sacripante, Guerino; McAneney, T. Brian; Drappel, Stephan; Van Kao, Sheau; and Alexandru, Lupu, 5,082,919, Cl. 528-176.000.

Alfa-Laval Cheese Systems Limited: *See—*
Barlow, Peter B.; and Christiansen, Ole M., 5,082,681, Cl. 426-495.000.

Ali, Mir A.; Robbins, Ronald E.; and Wakugawa, Jason M., to Hughes Aircraft Company. Glass bonded filler compositions for silicon carbide foam core mirrors. 5,082,805, Cl. 501-91.000.

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Gubelmann, Michel; and Allandrieu, Christian, 5,082,978, Cl. 568-637.000.

Allen, Junius D.: *See—*
Seiler, Nancy J.; Allen, Junius D.; Jackson, James E.; and Lynch, Samuel C., 5,082,069, Cl. 175-5.000.

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Allen, Timothy P.: *See—*
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Allergan, Inc.: *See—*
Lee, Gary C. M.; and Garst, Michael E., 5,082,954, Cl. 549-214.000.

Allgemeine Synthetische Gesellschaft Etablissement: *See—*
Schaerer, Andre J., 5,082,151, Cl. 223-1.000.

Alliant Techsystems Inc.: *See—*
Nelson, Stanley R., 5,082,508, Cl. 148-12.300.

Allied Constructions Pty. Limited: *See—*
White, Stanley B., 5,081,813, Cl. 52-656.000.

Allied-Signal Inc.: *See—*
Mayer, Richard E., 5,082,487, Cl. 71-30.000.

Allison, Robert: *See—*
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Alpine Polyvision, Inc.: *See—*
Warszawski, Bernard, 5,082,355, Cl. 359-265.000.

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Abe, Hiraku; Suzuki, Hidemasa; Tokunaga, Ichiro; and Ogawa, Yasuaki, 5,081,756, Cl. 29-593.000.
Bannai, Hiroyuki; and Kato, Hironori, 5,082,451, Cl. 439-164.000.
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Altmann, Conrad, to Eastman Kodak Company. Electrophotographic with scanning process module. 5,083,144, Cl. 346-157.000.

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Bias, Donald R., 5,082,409, Cl. 411-431.000.

Alza Corporation: *See—*
Wong, Patrick S. L.; Barclay, Brian L.; Deters, Joseph C.; and Theeuwes, Felix, 5,082,668, Cl. 424-473.000.

AM International Incorporated: *See—*
Bryson, Robert A., 5,082,256, Cl. 270-55.000.

Ambrose, William B.; and Kevern, Thomas C., to Pioneer Hi-Bred International, Inc. Inbred corn line PHP02. 5,082,992, Cl. 800-200.000.

Amerace Corporation: *See—*
Borgstrom, Alan D.; Bertini, Glen J.; and Meyer, Daniel F., 5,082,449, Cl. 439-88.000.

American Cyanamid Company: *See—*
Chang, Laurence W.; Anderson, Larry S.; and Ley, David A., 5,082,904, Cl. 525-355.000.

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Ames, Douglas A.; and Hageland, Ingval, to Electric Power Research Institute. Nucleating device for thermal energy storage compositions. 5,082,582, Cl. 252-70.000.

Ametek, Inc.: *See—*
Holler, Thomas D., 5,082,568, Cl. 210-679.000.

Amoco Corporation: *See—*
Cruickshank, Kenneth A., 5,082,935, Cl. 536-27.000.
Ernst, Andreas B.; Yokelson, Howard B.; and Gipe, Robert K., 5,082,959, Cl. 556-438.000.

AMP Incorporated: *See—*
Billman, Timothy B.; and Thrush, Roger L., 5,082,459, Cl. 439-637.000.
Minnis, Alan J.; and Whelan, Michael J. G., 5,082,461, Cl. 439-786.000.

Andersen, Harold W., to H. W. Andersen Products, Inc. Maintaining relative humidity in gas sterilizers and humidifying device for use with gas sterilizers. 5,082,636, Cl. 422-294.000.

Anderson, Janeen D. W.: *See—*
Mead, Carver A.; Allen, Timothy P.; Faggin, Federico; and Anderson, Janeen D. W., 5,083,044, Cl. 307-311.000.

Anderson, Karl P.; Clark, Whaite M.; Yu, Poli C.; and Moyle, Richard T., to Morton Coatings, Inc. Aqueous epoxy resin compositions and metal substrates coated therewith. 5,082,698, Cl. 427-386.000.

Anderson, Larry S.: *See—*
Chang, Laurence W.; Anderson, Larry S.; and Ley, David A., 5,082,904, Cl. 525-355.000.

Anderson, Robert K.: *See—*
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Fish, Robert B., Jr.; Rackley, Robert L.; Anderson, Robert K.; and Mainz, Michael H., 5,082,610, Cl. 264-80.000.

Anderson, Russell C., Jr., to General Motors Corporation. Variable flow orifice tube. 5,081,847, Cl. 62-222.000.

Andersson, Erland; and Skonvall, Tage, to Gustavsberg VVS Aktiebolag. Power line pylon and lamp post. 5,081,804, Cl. 52-40.000.

Ando, Nobuyasu, to Sanden Corporation. Heat exchanger having a corrosion prevention means. 5,082,051, Cl. 165-110.000.

Andreotti, Peter E.; Morse, Irwin S.; Thornthwaite, Jerry T.; Heimer, Malcolm L.; Salinger, Jorge D.; and Sobodowski, Joseph J., to Park Pharmaceuticals, Inc. Luminometer. 5,082,628, Cl. 422-82.080.

Andrews, Roland L.: *See—*
Heard, James L.; Berwin, Ted W.; Andrews, Roland L.; and Scanlan, Larry A., 5,083,204, Cl. 358-113.000.

Anno, Hidero; and Ono, Katsuhiro, to Kabushiki Kaisha Toshiba. X-ray image intensifier with unitary plate input phosphor screen. 5,083,017, Cl. 250-213.0VT.

Anritsu Corporation: *See—*
Horiuti, Masao; Kodama, Shunichi; and Kuroda, Kenji, 5,083,222, Cl. 359-350.000.
Katayama, Aiichi; Nakatsugawa, Kenji; Sekiya, Hitoshi; and Nakamura, Takafumi, 5,083,282, Cl. 364-487.000.
Kuroda, Kenji; and Sasaki, Koki, 5,083,289, Cl. 364-557.000.
Tagiri, Osamu, 5,083,080, Cl. 324-118.000.

Ansari, Farhad, to New Jersey Institute of Technology. Method and apparatus for measuring entrained air in concrete. 5,082,371, Cl. 356-446.000.

Aoki, Eiichiro: *See—*
Hiyoshi, Teruo; Suzuki, Hideo; Aoki, Eiichiro; Nakada, Akira; Kumano, Shinji; Watanabe, Kunihiko; and Sakama, Masao, 5,081,896, Cl. 84-600.000.

Aoki, Motoi: *See—*
Kurokawa, Toshikazu; Tanaka, Fusatoshi; Matsuura, Kouji; and Aoki, Motoi, 5,081,962, Cl. 123-52.0MV.

Aoshima, Shigeru: *See—*
Ochiai, Koichi; Aoshima, Shigeru; and Kamiunten, Shoji, 5,081,866, Cl. 73-204.210.

Aoshima, Shinichiro; Takahashi, Hironori; and Tsuchiya, Yutaka, to Hamamatsu Photonics K. K. Wavelength converting device. 5,082,340, Cl. 359-328.000.

Aoyagi, Hikaru: *See—*
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Apelian, Henry M.; Coffin-Beach, David; and Huq, Abu S., to Schering Corporation. Pharmaceutical composition of florfenicol. 5,082,863, Cl. 514-618.000.

Appel, Mel; and Rivette, Denni, to Mel Appel Ltd. Projectile and target game apparatus. 5,082,291, Cl. 273-346.000.

Appelbaum, Jerachmiel Y.; Chevion, Mordechai; and Uretzky, Gideon, to Hadassah Medical Organization; and Yissum Research and Development Corporation of the Hebrew University of Jerusalem. Pharmaceutical composition for protecting the heart comprising a heterocyclic ethylenediamine derivative and methods for the use thereof. 5,082,851, Cl. 514-332.000.

Apple Computer, Inc.: *See*—
Drory, Eatamar, 5,083,310, Cl. 381-30.000.
Applied Medical Technology, Inc.: *See*—
Picha, George J.; and Secrest, Dean J., 5,082,000, Cl. 128-751.000.
Applied Photonics Research: *See*—
Stavov, Vladimir, 5,083,030, Cl. 250-453.100.
Aquarium Pharmaceuticals, Inc.: *See*—
Goldstein, Joel M.; Patel, Vina; and Wiley, Steven J., 5,082,573, Cl. 210-749.000.
Arai, Tsutomu, to Sony Corporation. Television receiver with memory recall of television broadcast channel and system. 5,083,205, Cl. 358-140.000.
Araud, Claude, to Rhone-Poulenc Chimie. Polydimethylsiloxane/MQ resin antifoaming compositions. 5,082,590, Cl. 252-321.000.
Araya Industrial Co., Ltd.: *See*—
Hishikawa, Toshiharu, 5,081,755, Cl. 29-894.330.
Arber, Amihadar: *See*—
Graupe, Daniel; Arber, Amihadar; and Romeo, Silvano A., 5,081,989, Cl. 128-419.00R.
Arbogast, Franz: *See*—
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Arch, Jonathan R.; and Rogers, Norman H., to Beecham Group p.l.c. Morpholine compounds and treatment. 5,082,840, Cl. 514-233.500.
Archer, Thomas K.: *See*—
Bryant, Donald; and Archer, Thomas K., 5,082,313, Cl. 285-15.000.
Arena, Aldo: *See*—
Bruchez, Raymond J., Jr.; Mount, George E.; Dixon, James T.; Hagerman, Russell H.; Movick, Wayne K.; Arena, Aldo; and Stewart, Jim D., 5,082,182, Cl. 239-265.350.
Argosy Electronics, Inc.: *See*—
Newton, James R., 5,083,312, Cl. 381-68.400.
Arimoto, Satoshi, to Mitsubishi Denki Kabushiki Kaisha. Crystal growth method. 5,082,798, Cl. 437-108.000.
Aristech Chemical Corporation: *See*—
Cutter, Louis A.; and Godfrey, John J., 5,082,879, Cl. 523-336.000.
Ark, Inc.: *See*—
Sanborn, Charles H., III, 5,082,267, Cl. 271-10.000.
Arlt, Dieter: *See*—
Bachem, Henning; Schroder, Georg; Suling, Carlhans; Reiners, Jurgen; Muszik, Janos; Arlt, Dieter; Jautelat, Manfred; and Schroer, Wolf-Dieter, 5,082,527, Cl. 162-164.300.
Armstrong, John M.: *See*—
Pascal, Jean-Claude; Patmore, Leslie; Pfister, Jurg; Blondet, Dominique; and Armstrong, John M., 5,082,847, Cl. 514-312.000.
Armstrong, Robert N.: *See*—
Fink, Roger H.; and Armstrong, Robert N., 5,081,753, Cl. 28-219.000.
Armstrong World Industries, Inc.: *See*—
Kauffman, William J.; Lilley, George L.; and Ruch, David E., 5,082,708, Cl. 428-47.000.
Arnold, Steven: *See*—
Shalaby, Shalaby W.; Koelmel, Donald F.; and Arnold, Steven, 5,082,925, Cl. 528-354.000.
Arntz, Dietrich: *See*—
Boeck, Wolfgang; Arntz, Dietrich; Prescher, Guenter; and Burkhardt, Werner, 5,082,819, Cl. 502-212.000.
Aronson, Michael P.: *See*—
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Langer, Matthew E.; Khorshahi, Ferial; Aronson, Michael P.; and Hessel, John F., 5,082,578, Cl. 252-8.700.
Arrowood, Lisa N. Method for compiling a photo advice book. 5,082,312, Cl. 283-67.000.
Arroyo, Candido J., to AT&T Bell Laboratories. Water resistant communications cable. 5,082,719, Cl. 428-219.000.
Asahi Glass Company Ltd.: *See*—
Saitou, Toshihiko; Yamashita, Takashi; Ishii, Kenichi; Ogawa, Masanobu; Shibata, Shinya; Oda, Kenji; and Kume, Masaharu, 5,083,134, Cl. 343-713.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Ueda, Eiji; and Umeda, Noriaki, 5,082,732, Cl. 428-402.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Negoro, Ikuo; Negishi, Kiyoshi; and Kita, Masahiro, 5,082,382, Cl. 400-613.200.
Sumita, Masaya, 5,082,803, Cl. 501-1.000.
Tagaya, Nobuaki; Kuwahara, Hideyuki; Hashimoto, Takao; Komatsu, Noriko; Fukamachi, Keiko; Maeshima, Tsugio; Ishikawa, Toshihiro; and Ogawa, Tetsuro, 5,082,566, Cl. 210-656.000.
Ueda, Toshiaki, 5,083,146, Cl. 354-149.100.
Asahi Seiko Kabushiki Kaisha: *See*—
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Asahina, Koutarou: *See*—
Kitahara, Mikio; Machida, Koichi; Kubo, Takayuki; Torikai, Motoyuki; and Asahina, Koutarou, 5,082,880, Cl. 523-466.000.
Asanuma, Tadashi; Yamamoto, Kazuhiko; Ito, Mitsuru; and Kawanishi, Kaoru, to Mitsui Toatsu Chemicals, Inc. Polyolefin resin compositions and applications thereof. 5,082,893, Cl. 524-547.000.
Asaoka, Takemitsu: *See*—
Tokizawa, Minoru; Asaoka, Takemitsu; Matsuda, Hideaki; and Katori, Tatsuhiko, 5,082,948, Cl. 548-342.000.
Asea Brown Boveri AB: *See*—
Bergsjo, Nils-Johan; Drugge, Birger; Liljestrand, Lars; and Schreurs, Emile, 5,083,232, Cl. 361-11.000.
Asea Brown Boveri Aktiengesellschaft: *See*—
Blomberg, Lothar, 5,083,025, Cl. 250-353.000.
Asea Brown Boveri Ltd.: *See*—
Keller, Jakob; and Sattelmayer, Thomas, 5,081,844, Cl. 60-737.000.
Asha Corporation: *See*—
Clenet, Alain J-M., 5,081,912, Cl. 454-136.000.
Asmo Co., Ltd.: *See*—
Kamiya, Atsushi, 5,083,115, Cl. 340-624.000.
AST Research, Inc.: *See*—
Kagey, Lane O., 5,083,049, Cl. 307-480.000.
Asten Group, Inc.: *See*—
Dufour, Marcel, 5,082,532, Cl. 162-358.000.
AT&T Bell Laboratories: *See*—
Arroyo, Candido J., 5,082,719, Cl. 428-219.000.
Cammons, Ray R.; Carlisle, A. Wallace; and Lampert, N. R., 5,082,345, Cl. 385-60.000.
Coult, David G.; Masland, Joel C.; and Milbrodt, Michele A., 5,082,343, Cl. 385-34.000.
Gartside, Charles H., III; Panuska, Andrew J.; and Patel, Parbhubhai D., 5,082,348, Cl. 385-111.000.
Gaulke, David A.; O'Dell, Thomas M.; and Overmyer, Ricky L., 5,083,308, Cl. 379-381.000.
Knauer, Scott C.; Netravali, Arun N.; Petajan, Eric D.; and Westerink, Peter H., 5,083,206, Cl. 358-141.000.
Myers, Clyde J., 5,082,346, Cl. 385-54.000.
Ateliers Ribouleau: *See*—
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Athayde, Amulya L.; Wijmans, Johannes G.; and Baker, Richard W., to Membrane Technology & Research, Inc. Life support system for personnel shelter. 5,082,471, Cl. 55-16.000.
Athenes, Claude; Bernet, Jean-Louis; and Saxod, Jean-Bernard, to SGS-Thomson Microelectronics S.A. Transceiving process for a digital telephone line. 5,083,291, Cl. 395-325.000.
Atlantic Richfield Company: *See*—
Seiler, Nancy J.; Allen, Junius D.; Jackson, James E.; and Lynch, Samuel C., 5,082,069, Cl. 175-5.000.
Atlas Copco Tools AB: *See*—
Schoeps, Knut C., 5,082,066, Cl. 173-12.000.
Atobe, Daisuke: *See*—
Awaji, Toshio; Ueda, Kenichi; and Atobe, Daisuke, 5,082,598, Cl. 525-518.000.
Atochem: *See*—
Kappler, Patrick; and Perillon, Jean-Luc, 5,082,911, Cl. 526-249.000.
Atochem North America, Inc.: *See*—
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Atsugi Unisia Corp.: *See*—
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Aubry, Jacques A.; and Mauduit, Daniel A., to Societe Nationale Industrielle et Aerospatiale. Device for connecting the ends of a composite tube subjected to severe axial stress with metallic collars and manufacturing process therefor. 5,082,314, Cl. 285-174.000.
Auchter, Gerhard: *See*—
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Aumercier, Laurent, to Ferco International Usine de Ferrures de Batiment. Hinge fittings for pivoting and tiltable doors, windows or the like, situated in rabbets of the opening frame and the fixed frame. 5,081,741, Cl. 16-238.000.
Auriol, Jean-Marc; and Bornes, Philippe, to Ste. Ateliers de la Haute Garronne Ets Auriol Cie. Fastening means such as a rivet, assembly process and assembly obtained. 5,082,411, Cl. 411-506.000.
Aurness, Harold O.; and Mahler, Thomas G. Two-door, locked mailbox. 5,082,169, Cl. 232-17.000.
Ausimont S.r.l.: *See*—
Albizzati, Enrico; and Resconi, Luigi, 5,082,817, Cl. 502-102.000.
Ausimont S.p.A.: *See*—
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Aydin, Oral: *See*—
Filges, Ulrich; Aydin, Oral; Otterbach, Andreas; and Auchter, Gerhard, 5,082,884, Cl. 524-188.000.
Ayers, Gary M.; and Thomas, Paul A. Equipment hold-down apparatus. 5,082,233, Cl. 248-553.000.
Ayvaz, Ohannes, to Haci Ayvaz, A.S. Steam trap. 5,082,237, Cl. 251-11.000.
Azuma, Motoo: *See*—
Yanagida, Tsuneo; Azuma, Motoo; and Kikkawa, Kenji, 5,083,303, Cl. 369-48.000.
Bachem, Henning; Schroder, Georg; Suling, Carlhans; Reiners, Jurgen; Muszik, Janos; Arlt, Dieter; Jautelat, Manfred; and Schroer, Wolf-Dieter, to Bayer Aktiengesellschaft. Nitrogen-containing polymeric compounds. 5,082,527, Cl. 162-164.300.
Bachtel, Robert W.: *See*—
Reynolds, Bruce E.; Bea, Donald A.; and Bachtel, Robert W., 5,082,551, Cl. 208-100.000.

Bader, Monika E.: *See*—
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Badyal, Rajeev; Mahjouri, Sam; Reid, Donald M.; and Gilsdorf, Michael J., to Hewlett-Packard Company. Energy control circuit for a thermal ink-jet printhead. 5,083,137, Cl. 346-1.100.

Bailey, Thomas F.; and Campbell, John E., to MASX Energy Services Group, Inc. Valve body for oilfield applications. 5,082,020, Cl. 137-533.210.

Baker, David W.; and Caradine, Joe K. Coin operated vending machine. 5,082,101, Cl. 194-350.000.

Baker, Frank K.: *See*—
Pfiester, James R.; Baker, Frank K.; and Sivan, Richard D., 5,082,794, Cl. 437-40.000.

Baker, Joseph R. Sequencing valve position indicator. 5,082,015, Cl. 137-119.000.

Baker, Richard W.: *See*—
Athayde, Amulya L.; Wijmans, Johannes G.; and Baker, Richard W., 5,082,471, Cl. 55-16.000.

Balasubramanian, Venkataraman: *See*—
Heindel, Ned D.; Turizo, Miguel; Burns, Hugh D.; and Balasubramanian, Venkataraman, 5,082,964, Cl. 558-270.000.

Balemi, William J. Connector with a spring-biased closure member. 5,082,389, Cl. 403-322.000.

Ballaro', David; Patti, Alfonso; Ferla, Giuseppe; and Frisina, Ferruccio, to SGS-Thomson Microelectronics S.r.l. Darlington device with an ultra-lightweight emitter speed-up transistor. 5,083,182, Cl. 357-46.000.

Ballinger, David E.: *See*—
Fray, William S.; and Ballinger, David E., 5,083,245, Cl. 362-61.000.

Balsells, Joan C.: *See*—
Balsells, Peter J., 5,082,390, Cl. 403-326.000.

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Bannai, Hiroyuki; and Kato, Hironori, to Alps Electric Co., Ltd. Clock spring connector with cable driving mechanism. 5,082,451, Cl. 439-164.000.

Bansleben, Donald A.; Daly, Joseph M.; and Zavadsky, Emil, to W.R. Grace & Co.-Conn. Shrink controlled low-temperature-curable polyester resin compositions. 5,082,878, Cl. 523-203.000.

Barakat, Mohamed A.: *See*—
Thacher, Kerry E.; Sumka, Gary H.; Barakat, Mohamed A.; Hancharyk, John S.; and Klayh, John A., 5,083,271, Cl. 364-411.000.

Barchas, Richard K.; and Hickey, Thomas P., to Lummus Crest, Inc. Membrane separation process for cracked gases. 5,082,481, Cl. 62-23.000.

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Wong, Patrick S. L.; Barclay, Brian L.; Deters, Joseph C.; and Theeuwes, Felix, 5,082,668, Cl. 424-473.000.

Bargigia, Gianangelo; Tortelli, Vito; Tonelli, Claudio; and Modena, Silvana, to Ausimont S.p.A. Process for the synthesis of perfluoroalkandienes. 5,082,981, Cl. 570-156.000.

Bargigia, Gianangelo; Caporiccio, Gerardo; Tonelli, Claudio; Flabbi, Luciano; and Marchionni, Giuseppe, to Montedison S.p.A. Perfluoropolyethers used as fluids for testing in electronic field. 5,083,082, Cl. 324-158.00F.

Barkalow, Raymond W.: *See*—
Guthrie, Roger T.; and Barkalow, Raymond W., 5,081,953, Cl. 118-715.000.

Barlow, Peter B.; and Christiansen, Ole M., to Alfa-Laval Cheese Systems Limited. Method and apparatus for producing moulded cheese blocks. 5,082,681, Cl. 426-495.000.

Barnes, Frank S., to University of Colorado Foundation, Inc. Recording head suspension utilizing superconductor means. 5,082,827, Cl. 505-1.000.

Barns, Willis E., Jr.: *See*—
Boyd, William G.; Barns, Willis E., Jr.; and Turner, Ray B., Jr., 5,081,822, Cl. 53-468.000.

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Bobrich, Michael; Roller, Hermann; Lehner, August; Keppeler, Uwe; Suettinger, Rudolf; Loch, Werner; Lenz, Werner; and Schulz, Guenther, 5,082,737, Cl. 428-425.900.
Epple, Gerhard, 5,082,957, Cl. 552-244.000.
Filges, Ulrich; Aydin, Oral; Otterbach, Andreas; and Auchter, Gerhard, 5,082,884, Cl. 524-188.000.
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Fink, Roger H.; and Armstrong, Robert N., 5,081,753, Cl. 28-219.000.

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Burgess, Lloyd W., Jr.; and Goldman, Don S., 5,082,629, Cl. 422-82.110.

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Duester, Everett L.; Blanchard, Russell O.; and Brower, Harley, 5,082,153, Cl. 223-96.000.

Baubry, Bernard, to Thomson-Brandt Armements. System for the opening of an unfolding tail unit for projectiles. 5,082,203, Cl. 244-3.280.

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Sohn, Erich; Handte, Reinhard; Mildenberger, Hilmar; Burstell, Helmut; Bauer, Klaus; and Bieringer, Hermann, 5,082,949, Cl. 548-378.000.

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Sluga, Robert M.; Watkins, Randolph H.; Fisher, Jerry D.; Berry, Dennis C.; and Eldridge, Milo, 5,082,503, Cl. 134-26.000.

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Bachem, Henning; Schroder, Georg; Suling, Carlhans; Reiners, Jurgen; Muszik, Janos; Arlt, Dieter; Jautelat, Manfred; and Schroer, Wolf-Dieter, 5,082,527, Cl. 162-164.300.
Blank, Heinz U.; and Kraus, Helmut, 5,082,976, Cl. 568-431.000.
Brandes, Wilhelm; Hanssler, Gerd; Reinecke, Paul; Scheinpflug, Hans; and Holmwood, Graham, 5,082,855, Cl. 514-383.000.
Marhold, Albrecht, 5,082,971, Cl. 564-442.000.
Muller, Klaus-Helmut; Findeisen, Kurt; Haug, Michael; Heinemann, Ulrich; Kluth, Joachim; Konig, Klaus; Santel, Hans-Joachim; Lurssen, Klaus; and Schmidt, Robert R., 5,082,490, Cl. 71-92.000.
Tarnow, Horst; and Homeyer, Bernhard, 5,082,862, Cl. 514-617.000.

Bea, Donald A.: *See*—
Reynolds, Bruce E.; Bea, Donald A.; and Bachtel, Robert W., 5,082,551, Cl. 208-100.000.

Beal, Thomas J., to Majco Building Specialties, L.P. Yellow flame gas fireplace burner assembly. 5,081,981, Cl. 126-92.00R.

Bear, Avi. Packaging means and method for shipping pastries. 5,082,677, Cl. 426-124.000.

Beattie, James C. Adjustable rotational coupler. 5,082,299, Cl. 279-1.00L.

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Theobald, Paul E.; Seymour, Daniel B.; and Okawa, Dobson M., 5,082,790, Cl. 436-536.000.

Beckmann, Friedrich-Karl: *See*—
Fuchs, Manfred H.; Hoppe, Wolfgang; Beckmann, Friedrich-Karl; Brinkmeyer, Ernst; and Brennecke, Wolfgang, 5,082,368, Cl. 356-73.100.

Beecham Group p.l.c.: *See*—
Arch, Jonathan R.; and Rogers, Norman H., 5,082,840, Cl. 514-233.500.

Beers, Howard L., to HF Scientific, Inc. Indicator circuit for a concentration measuring apparatus. 5,083,036, Cl. 250-565.000.

Beeson, Douglas: *See*—
Lemaire, Gilles; and Beeson, Douglas, 5,081,906, Cl. 91-491.000.

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Bein, Thomas W., to United States of America, Navy. Mechanical scavenging system for single screw compressors. 5,082,431, Cl. 418-97.000.

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Kurtz, Walter; Muench, Karl; Kranz, Joachim; and Belde, Horst, 5,082,498, Cl. 106-499.000.

Bell, Andrew, to Hercules Incorporated. Pure tungsten oxyphenolate complexes as DCPD polymerization catalysts. 5,082,909, Cl. 526-169.000.

Bell Communications Research, Inc.: *See*—
Nelson, Terence J., 5,083,120, Cl. 340-784.000.

Bell & Howell Phillipsburg Co.: *See*—
Rabindran, K. George; Filicicchia, David; and Guenther, Kenneth L., 5,083,281, Cl. 364-478.000.

Bell, Wayne: *See*—
Puckett, Riley; and Bell, Wayne, 5,082,292, Cl. 273-421.000.

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Pulkowski, Jeffrey H.; Macklem, Elizabeth A.; and Busker, L. H., 5,082,533, Cl. 162-359.000.

Ben Company Ltd.: *See*—
Harada, Hidenari; and Fukaya, Kensaku, 5,082,324, Cl. 297-83.000.

Bendix Altecna S.p.A.: *See*—
Tribuzio, Pasquale; and Mercieri, Francesco N., 5,082,332, Cl. 303-9.730.

Benjamin, Gary H.: *See*—
Klose, Karl W.; and Benjamin, Gary H., 5,082,519, Cl. 156-396.000.

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Lee, Yungli J.; and Benson, Lewis B., 5,082,639, Cl. 423-242.000.

Bentz, Rolf, to Ciba-Geigy Corporation. Waste air purification process. 5,082,475, Cl. 55-68.000.

Benz, Mark G.: *See*—
Rumaner, Lee E.; Benz, Mark G.; and Knudsen, Bruce A., 5,082,164, Cl. 228-176.000.

Bereskin, Alexander B. Microwave test fixtures for determining the dielectric properties of a material. 5,083,088, Cl. 324-632.000.

Berge, Olay: *See*—
Ringesten, Bjorn; Berge, Olay; and Berntsson, Leif, 5,082,393, Cl. 404-28.000.

Bergen, Richard F.: *See*—
Gundlach, Robert W.; and Bergen, Richard F., 5,083,145, Cl. 346-159.000.

Berger, Richard. Method of and system for determining position of tennis ball relative to tennis court, and tennis ball provided therefor. 5,082,263, Cl. 273-29.00R.

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Hemstreet, George P.; Love, Tom J., Jr.; and Bergey, Karl H., 5,081,999, Cl. 128-750.000.

Berghofer, Charles C. Sports timing aid. 5,082,281, Cl. 273-183.00R.

Berglund, Goran; Lyen, Gosta; and Westberg, Torsten, to Sandvik AB. Gas container, a coupling for a gas container, and a method of making a gas container. 5,082,243, Cl. 251-144.000.

Bergman, David. Grip augmenting bowling ball handling apparatus. 5,082,265, Cl. 273-54.00B.

Bergmann, Bernhard: *See*—
Hartmann, Peter; and Bergmann, Bernhard, 5,082,614, Cl. 264-256.000.

Bergna, Horacio E.; Bruno, Salvatore A.; and Burn, Ian, to Du Pont de Nemours, E. I., and Company. Ceramic dielectric composition and method for preparation. 5,082,810, Cl. 501-134.000.

Bergsjo, Nils-Johan; Drugge, Birger; Liljestrand, Lars; and Schreurs, Emile, to Asea Brown Boveri AB. Fault current limiter. 5,083,232, Cl. 361-11.000.

Berlex Laboratories, Inc.: *See*—
McCaman, Michael T.; and King, John F., 5,082,775, Cl. 435-69.700.

Bernard, Russell J.: *See*—
McGregor, Donald B.; Davis, Michael W.; and Bernard, Russell J., 5,081,771, Cl. 33-667.000.

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Athenes, Claude; Bernet, Jean-Louis; and Saxod, Jean-Bernard, 5,083,291, Cl. 395-325.000.

Berneur, Claude; and Boiteau, Jean-Pierre, to Bull S.A. Apparatus for selective tinning of substrate leads. 5,081,949, Cl. 118-63.000.

Bernhardt, Bruno, to IEG Industrie-Engineering GmbH. Arrangement for cleaning contaminated ground water. 5,082,053, Cl. 166-115.000.

Berntsson, Leif: *See*—
Ringesten, Bjorn; Berge, Olay; and Berntsson, Leif, 5,082,393, Cl. 404-28.000.

Berridge, Marc S., to Case Western Reserve University. Process and apparatus for synthesizing oxygen-15 labelled butanol for positron emission tomography. 5,082,980, Cl. 568-917.000.

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Sluga, Robert M.; Watkins, Randolph H.; Fisher, Jerry D.; Berry, Dennis C.; and Eldridge, Milo, 5,082,503, Cl. 134-26.000.

Berry, Ronald L.: *See*—
Schroeder, Daniel R.; Lam, Kin S.; Hesler, Grace A.; Gustavson, Donald R.; Tomita, Koji; and Berry, Ronald L., 5,082,933, Cl. 536-16.800.

Bertini, Glen J.: *See*—
Borgstrom, Alan D.; Bertini, Glen J.; and Meyer, Daniel F., 5,082,449, Cl. 439-88.000.

Berwin, Ted W.: *See*—
Heard, James L.; Berwin, Ted W.; Andrews, Roland L.; and Scanlan, Larry A., 5,083,204, Cl. 358-113.000.

Best, Mark P. Method of preparing conjugated antibodies. 5,082,928, Cl. 530-389.000.

Bettermann, Joachim: *See*—
Frye, Andreas; Kruse, Jurgen; Weyand, Julius; Bettermann, Joachim; and Bringmann, Dirk, 5,083,127, Cl. 342-1.000.

Betz Laboratories, Inc.: *See*—
McDonald, Alexander C., 5,082,592, Cl. 252-389.400.

Beula, David A.; Momont, Joseph A.; and Copa, William M., to Zimpro Passavant Environmental Systems Inc. Caustic sulfide wet oxidation process. 5,082,571, Cl. 210-739.000.

Beumer, Klaus, to Robert Krups Stiftung & Co. KG. Machine for brewing hot beverages. 5,081,915, Cl. 99-281.000.

Beyer, Peter E.; and Moran, Robert E., Jr., to Vollrath Company, Inc., The. Food breath guard apparatus. 5,082,334, Cl. 312-140.400.

Beylat, Jean-Luc; Pitel, Fabrice; and Monnot, Michel, to Alcatel CIT. Optical fiber feeder assembly including an amplifier. 5,082,376, Cl. 385-3.000.

Beysson, Daniel, to Schlumberger Industries. Method and a system enabling software to be run securely. 5,083,309, Cl. 380-4.000.

Bezos, Angel P.; and Fernandez, Emilio A., to Pulse Electronics, Inc. Railroad brake pressure recording. 5,083,274, Cl. 364-424.040.

Bias, Donald R., to Aluminum Company of America. Vehicular lug nut cover and clip. 5,082,409, Cl. 411-431.000.

Bickar, David; Bonaventura, Celia; and Bonaventura, Joseph, to Duke University. Method for catalyzing oxidation/reduction reactions of simple molecules. 5,082,642, Cl. 423-402.000.

Bieringer, Hermann: *See*—
Sohn, Erich; Handte, Reinhard; Mildenberger, Hilmar; Burstell, Helmut; Bauer, Klaus; and Bieringer, Hermann, 5,082,949, Cl. 548-378.000.

Billman, Timothy B.; and Thrush, Roger L., to AMP Incorporated. Dual readout SIMM socket. 5,082,459, Cl. 439-637.000.

Bingley, Lawrence J. Security pen and pencil caddy apparatus. 5,082,119, Cl. 211-4.000.

Biogen, Inc.: *See*—
Ernst, Joachim F.; and Schmeissner, Ursula, 5,082,783, Cl. 435-69.100.

BioProbe International, Inc.: *See*—
Ngo, That T.; and Fung, Gilbert, 5,082,929, Cl. 530-391.000.

Biotronic Systems Corporation: *See*—
Stanbro, William D., 5,082,627, Cl. 422-82.010.

Birnbach, Stefan: *See*—
Oftring, Alfred; Birnbach, Stefan; Baur, Richard; Gousetis, Charalampos; and Trieselt, Wolfgang, 5,082,599, Cl. 252-546.000.

Bizet, Marc: *See*—
Nugues, Pierre; and Bizet, Marc, 5,083,060, Cl. 315-3.500.

BJ Services Company: *See*—
Dawson, Jeffrey C., 5,082,579, Cl. 252-8.551.

Bjorner, Johannes A. S.: *See*—
Hawkins, Thomas B.; MacIntyre, Douglas A.; and Bjorner, Johannes A. S., 5,083,100, Cl. 333-164.000.

Blackwelder, Maurice W.: *See*—
Karabedian, James A.; and Blackwelder, Maurice W., 5,082,608, Cl. 264-46.100.

Blair, Norman. Device for keeping a bag mouth open and holding the bag against a vertical surface or a pole. 5,082,219, Cl. 248-99.000.

Blanchard, Russell O.: *See*—
Duester, Everett L.; Blanchard, Russell O.; and Brower, Harley, 5,082,153, Cl. 223-96.000.

Blank, Heinz U.; and Kraus, Helmut, to Bayer Aktiengesellschaft. Process for the preparation of benzaldehydes. 5,082,976, Cl. 568-431.000.

Blankenship, Michael: *See*—
Satterfield, Marshall G.; Steinke, David M.; and Blankenship, Michael, 5,082,716, Cl. 428-175.000.

Blanvalet, Claude: *See*—
Loth, Myriam; Blanvalet, Claude; and Valange, Baudouin, 5,082,584, Cl. 252-122.000.

Blin, Philippe, to Usinor Sacilor. Device for casting thin strips of metal between. 5,082,046, Cl. 164-428.000.

Blomberg, Lothar, to Asea Brown Boveri Aktiengesellschaft. Passive infrared motion indicator. 5,083,025, Cl. 250-353.000.

Blondeau, Pierre, to Societe Interroll. Handling apparatus for displacing, in a substantially horizontal longitudinal direction, unitary loads resting on rolling members. 5,082,109, Cl. 198-781.000.

Blondet, Dominique: *See*—
Pascal, Jean-Claude; Patmore, Leslie; Pfister, Jurg; Blondet, Dominique; and Armstrong, John M., 5,082,847, Cl. 514-312.000.

Blumer, David J., to Oxy USA Inc. Composition and method for slowly dissolving siliceous material. 5,082,058, Cl. 166-300.000.

Board of Regents, The University of Texas System: *See*—
Fleischmann, W. Robert, 5,082,659, Cl. 424-85.500.

Bobrich, Michael; Roller, Hermann; Lehner, August; Keppeler, Uwe; Suettinger, Rudolf; Loch, Werner; Lenz, Werner; and Schulz, Guenther, to BASF Aktiengesellschaft. Magnetic recording media having a branched thermoplastic polyurethane binder containing a polysiloxane component in the main chain. 5,082,737, Cl. 428-425.900.

BOC Group, Inc, The: *See*—
Shirley, Arthur I.; and LaCava, Alberto I., 5,082,474, Cl. 55-26.000.

Bock, Normann, to Edelhoff M.S.T.S. GmbH. Method of picking up and depositing a hollow receptacle such as a bin, container or the like by and on, respectively, a vehicle with change gear mechanism;

change gear mechanism for carrying out the method; and receptacle designed for use in such method. 5,082,416, Cl. 414-492.000.

Bodor, Nicholas S. Brain-specific analogues of centrally acting amines. 5,082,853, Cl. 514-355.000.

Boeck, Wolfgang; Arntz, Dietrich; Prescher, Guenter; and Burkhardt, Werner, to Degussa Aktiengesellschaft. Catalyst for catalytic gas phase oxidation of olefins into unsaturated aldehydes and method for making the catalyst. 5,082,819, Cl. 502-212.000.

Boehringer Ingelheim GmbH: *See—*
Weber, Karl-Heinz; Harreus, Albrecht; Casals-Stenzel, Jorge; Muacevic, Gojko; Troger, Wolfgang; and Walther, Gerhard, 5,082,839, Cl. 514-220.000.

Boehringer Mannheim GmbH: *See—*
Grage, Henry M., Jr., 5,082,626, Cl. 422-56.000.

Boeing Company, The: *See—*
Brees, Dale W.; Engelke, Claude W.; and Linscheid, Larry L., 5,082,181, Cl. 239-265.350.
Jones, Everett E., 5,081,763, Cl. 29-568.000.
Lubowitz, Hyman R.; and Sheppard, Clyde H., 5,082,905, Cl. 525-420.000.
Matich, Charles B., 5,082,208, Cl. 244-78.000.
Sayyadi, Babak, 5,082,521, Cl. 156-552.000.

Boergerding, Heinz: *See—*
Stroszynski, Joachim; Boergerding, Heinz; and Lehmann, Peter, 5,082,537, Cl. 205-139.000.

Boinot, Francois; Cousin, Michel; Hochin, Andre ; and Meyer, Nicolas, to Norsolor. Phenolic resin compositions suitable for the manufacture of prepreg mats. 5,082,918, Cl. 528-140.000.

Boiteau, Jean-Pierre: *See—*
Berneur, Claude; and Boiteau, Jean-Pierre, 5,081,949, Cl. 118-63.000.

Bolie, Victor W., to University of New Mexico, The. Adaptive control system for pulsed megawatt klystrons. 5,083,097, Cl. 331-6.000.

Boller, George E.: *See—*
Renk, Richard J.; Boller, George E.; and Ebert, Richard M., 5,082,089, Cl. 184-64.000.

Bolton, Barbara A.: *See—*
Wells, Gregory J.; and Bolton, Barbara A., 5,083,004, Cl. 219-121.500.

Bombardier, Inc.: *See—*
Samson, Jean-Paul, 5,081,868, Cl. 73-532.000.

Bommaraju, Tilak V.: *See—*
Fritts, Sharon D.; and Bommaraju, Tilak V., 5,082,567, Cl. 210-673.000.

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Bickar, David; Bonaventura, Celia; and Bonaventura, Joseph, 5,082,642, Cl. 423-402.000.

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Boni, Romano. Thread guiding unit with automatic control particularly for spooling machines. 5,082,193, Cl. 242-158.00R.

Bonne, Ulrich; and Ohnstein, Thomas R. Electronic microvalve apparatus and fabrication. 5,082,242, Cl. 251-129.010.

Bonvini, Alberto; and Mascia, Francesco, to Centro Sviluppo Settori Impiego S.r.l. Grid for electrical household appliances, made from a thermoplastic material. 5,082,124, Cl. 211-153.000.

Boor nee Mezei, Anna: *See—*
Molnar, Csaba; Hajos, Gyorgy; Szporny, Laszlo; Toth, Jozsef; Kiraly, Arpad; Boor nee Mezei, Anna; Csorgei, Janos; Szekely, Kristina; Forgacs, Lilla; Fekete, Gyorgy; Herenyi, Bulcsu; Holly, Sandor; and Szunyog, Jozsef, 5,082,835, Cl. 514-180.000.

Borden, Inc.: *See—*
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Borgo Nova SpA: *See—*
Bruni, Ludovico, 5,081,968, Cl. 123-193.00P.

Borgstrom, Alan D.; Bertini, Glen J.; and Meyer, Daniel F., to Amerace Corporation; and Dow Corning Corporation. Removable media injection fitting. 5,082,449, Cl. 439-88.000.

Borland, James E.: *See—*
Smith, Kim R.; and Borland, James E., 5,082,600, Cl. 252-547.000.

Borner, Reinhard, to Heinrich-Hertz-Institut for Nachrichtentechnik Berlin GmbH. Autostereoscopic viewing device for creating three-dimensional perception of images. 5,083,199, Cl. 358-88.000.

Bornes, Philippe: *See—*
Auriol, Jean-Marc; and Bornes, Philippe, 5,082,411, Cl. 411-506.000.

Borodulin, German; Persidsky, Maxim; and Shkolnik, Alexander, to Urological Instruments Research, Inc. Vibratory method and device for treating female voiding dysfunctions. 5,081,985, Cl. 128-32.000.

Borton, Michael D.; Hubble, Fred F., III; Martin, James P.; Mattioli, Theresa K.; and Shoemaker, Ralph A., to Xerox Corporation. Densitometer for measuring developability. 5,083,161, Cl. 355-208.000.

Bosch-Siemens Hausgerate GmbH: *See—*
Henry, Karlheinz; and Gerl, Josef, 5,083,010, Cl. 219-413.000.

Bosley, Rodney W., Jr.; Thomson, Paul G.; and Foster, Thomas L., to Vance Products Incorporated. Echogenic devices, material and method. 5,081,997, Cl. 128-662.020.

Bott, John A. Article carrier. 5,082,158, Cl. 224-321.000.

Boundy, Jeffrey W., to Sabco Limited. Multiple outlet water timer. 5,082,022, Cl. 137-624.120.

Bousman, Thomas W., to Motorola, Inc. High frequency electronic assembly. 5,083,238, Cl. 361-413.000.

Bowon Trading Co., Ltd.: *See—*
Kim, Byung-Woong, 5,081,777, Cl. 40-152.000.

Boyd, William G.; Barns, Willis E., Jr.; and Turner, Ray B., Jr., to Warner-Lambert Company. Automatic caplet filler. 5,081,822, Cl. 53-468.000.

Boyle, Michael D. P.; and Yarnall, Michele, to University of Florida Research Foundation, Inc. Type II bacterial Fc receptors. 5,082,931, Cl. 530-413.000.

Bozoglou, Pantelis, to Juki Corporation. Elastic tape sewing machine. 5,081,945, Cl. 112-121.260.

BP Chemicals Limited: *See—*
Jackson, David A.; McGee, Edward; and Parker, David A., 5,082,675, Cl. 426-54.000.
Raufast, Charles, 5,082,634, Cl. 422-143.000.

BP Chemicals Limites: *See—*
Howson, Mark R., 5,082,576, Cl. 507-130.000.

Brabec, Daniel L.: *See—*
Martin, Charles R.; Rousser, Robert; and Brabec, Daniel L., 5,082,141, Cl. 221-278.000.

Brady, Jack R. Concealed portable display device fastener. 5,081,749, Cl. 24-577.000.

Braga, Vittorio; and Ghisellini, Renato, to Ausimont S.p.A. Cross-linked polypropylene compositions suitable for the preparation of foamed materials. 5,082,869, Cl. 521-134.000.

Braig, James R.: *See—*
Yelderman, Mark; Goldberger, Daniel S.; and Braig, James R., 5,081,998, Cl. 128-719.000.

Braish, Tamim F., to Pfizer Inc. Process for recycling amine isomer. 5,082,970, Cl. 564-424.000.

Brakel, Christine L.; Cook, Alan F.; and Vuocolo, Edmund, to Enzo Biochem, Inc. End labeled nucleotide probe. 5,082,830, Cl. 514-44.000.

Branca, Phillip A.: *See—*
Mallouk, Robert S.; Branca, Phillip A.; and Perry, Randal L., 5,082,472, Cl. 55-16.000.

Brandenburger, Larry B.; and Ruhoff, Philip J., to Valspar Corporation, The. Modified-acrylate polymers and coating compositions made therefrom. 5,082,922, Cl. 528-323.000.

Brandes, Wilhelm; Hanssler, Gerd; Reinecke, Paul; Scheinpflug, Hans; and Holmwood, Graham, to Bayer Aktiengesellschaft. Fungicidal agents. 5,082,855, Cl. 514-383.000.

Brantingham, George L.: *See—*
Slawinski, Christopher; Houghton, Richard A.; and Brantingham, George L., 5,083,113, Cl. 340-572.000.

Brassington, Michael P.: *See—*
El-Diwany, Monir H.; Brassington, Michael P.; and Razouk, Reda R., 5,082,796, Cl. 437-44.000.

Braun, Thomas D. Tool wrist strap. 5,082,156, Cl. 224-220.000.

Braunig, Dieter; and Willikens, Axel, to Daimler-Benz AG. End connector for contacting at least two shielded cables. 5,082,994, Cl. 174-87.000.

Braunlich, Peter F.: *See—*
Hoelsman, James W.; Hegland, Joel E.; Braunlich, Peter F.; and Tetzlaff, Wolfgang, 5,083,031, Cl. 250-484.100.

Bravender, Victoria H.: *See—*
Walters, Craig E.; Bravender, Victoria H.; and Shuhi, Carl J., 5,081,965, Cl. 123-188.0AA.

Bravet, Jean-Louis; and Daude, Gerard, to Saint-Gobain Vitrage International. Encapsulated window glass, ready for installation, and a method for its production. 5,082,736, Cl. 428-425.600.

Brazdil, James F., Jr.: *See—*
Teller, Raymond G.; Brazdil, James F., Jr.; Bartek, Joseph P.; and Brussee, Ann M., 5,082,816, Cl. 502-84.000.

Breckenridge, Lloyd L.; Jorgensen, Diane V.; and Sapre, Ajit V., to Mobil Oil Corporation. Reduction of benzene content of reformate in a catalytic cracking unit. 5,082,983, Cl. 585-475.000.

Brees, Dale W.; Engelke, Claude W.; and Linscheid, Larry L., to Boeing Company, The. Gas jet engine nozzle. 5,082,181, Cl. 239-265.350.

Brennan, Matthew T.; and Moruzzi, James A., to SMA Controls, Inc. Pipe cutting. 5,081,768, Cl. 30-101.000.

Brennecke, Wolfgang: *See—*
Fuchs, Manfred H.; Hoppe, Wolfgang; Beckmann, Friedrich-Karl; Brinkmeyer, Ernst; and Brennecke, Wolfgang, 5,082,368, Cl. 356-73.100.

Bresson, Raymond: *See—*
Barrault, Michel; Schuster, Philippe; Moussanet, Roland; and Bresson, Raymond, 5,083,081, Cl. 324-126.000.

Breu, Fred A., to Wayne Technology, Inc. Pyrolytic conversion system. 5,082,534, Cl. 202-131.000.

Brewer, Shelby L. Air streamlining deflector shield for a motor vehicle. 5,082,321, Cl. 296-91.000.

Bricmanage, Inc.: *See—*
Bricmont, Francis H., 5,082,047, Cl. 164-476.000.

Bricmont, Francis H., to Bricmanage, Inc. Method of continuously casting and rolling metallic strip. 5,082,047, Cl. 164-476.000.

Bridgestone Australia Ltd.: *See—*
Rohrlach, Milo L.; and Hall, William J., 5,082,609, Cl. 264-46.400.

Bridgestone Corporation: *See—*
Fukuda, Hiroya; Akou, Masayuki; Sawa, Eiji; and Ohashi, Takashi, 5,082,870, Cl. 521-159.000.
Kobayashi, Yasuhiko; Koseki, Hiroyuki; and Kawame, Yumi, 5,082,042, Cl. 152-535.000.
Shiozawa, Shinji; and Hodate, Masato, 5,082,041, Cl. 152-381.300.

Brigante, Mary-Jo F.; Guiles, Joseph W.; and Morabito, James, to Pitney Bowes Inc. Sheet processing apparatus. 5,082,255, Cl. 270-45.000.

Bright, Robert P. Games and random selection apparatus therefor. 5,082,274, Cl. 273-138.00A.

Bringmann, Dirk: *See—*
Frye, Andreas; Kruse, Jurgen; Weyand, Julius; Bettermann, Joachim; and Bringmann, Dirk, 5,083,127, Cl. 342-1.000.

Brinkmeyer, Ernst: *See—*
Fuchs, Manfred H.; Hoppe, Wolfgang; Beckmann, Friedrich-Karl; Brinkmeyer, Ernst; and Brennecke, Wolfgang, 5,082,368, Cl. 356-73.100.

Bristol-Myers Squibb Co.: *See—*
Schroeder, Daniel R.; Lam, Kin S.; Hesler, Grace A.; Gustavson, Donald R.; Tomita, Koji; and Berry, Ronald L., 5,082,933, Cl. 536-16.800.

Britcanus Corporation: *See—*
Walker, Robert W.; Karp, Ricki S.; and Hayter, John S., 5,083,272, Cl. 364-412.000.

British Telecommunications Public Limited Company: *See—*
Parke, Ian, 5,083,202, Cl. 358-105.000.

Broadmoore, Laurence G. Solenoid mounting systems for player and reproducing pianos. 5,081,892, Cl. 84-19.000.

Broadmoore, Laurence G. Striker solenoid assembly for player and reproducing pianos. 5,081,893, Cl. 84-19.000.

Broer, Dirk J.: *See—*
Eguchi, Shuji; Kloosterboer, Johan G.; and Broer, Dirk J., 5,082,559, Cl. 210-198.200.

Brooks, Joe G.; Goforth, Billy D.; and Goforth, Charles L., to Advanced Environmental Recycling Technologies, Inc. Method for making composite material. 5,082,605, Cl. 264-40.600.

Brooks, Robert T.: *See—*
Wood, Edward T.; Surgnier, David H.; and Brooks, Robert T., 5,082,062, Cl. 166-382.000.

Brooks, Steven D., to De La Rue Systems Limited. Radiation generator control apparatus. 5,083,063, Cl. 315-294.000.

Broome, Frank H.: *See—*
Karabin, Tadeusz; and Broome, Frank H., 5,082,172, Cl. 236-1.00G.

Brother Kogyo Kabushiki Kaisha: *See—*
Hirayama, Takanobu; Kinoshita, Naohisa; Kashima, Hiroyuki; Hasegawa, Makoto; Tsuzuki, Toshihiro; and Muto, Kiyoshi, 5,082,269, Cl. 271-65.000.
Homma, Yoshiyasu, 5,083,151, Cl. 355-27.000.
Kashima, Hiroyuki; Muto, Kiyoshi; Kinoshita, Naohisa; Tsuzuki, Toshihiro; and Hasegawa, Makoto, 5,083,158, Cl. 355-200.000.
Kin, Narihiko, 5,081,762, Cl. 29-568.000.
Nakanishi, Fumino, 5,081,944, Cl. 112-121.120.
Nakanishi, Fumio, 5,081,943, Cl. 112-121.120.

Brower, Harley: *See—*
Duester, Everett L.; Blanchard, Russell O.; and Brower, Harley, 5,082,153, Cl. 223-96.000.

Brown, Alan J.; Shurling, Dickey S., Jr.; and Carswell, Jenny S., to ECC American Inc. Aggregated composite mineral pigments. 5,082,887, Cl. 524-413.000.

Brown, David E.; and Zwadlo, Gregory L., to Minnesota Mining & Manufacturing Company. Photoconductor resetting following multiple charge images. 5,083,163, Cl. 355-219.000.

Brown, deceased Lawrence M.; and Huang, Tracy J., to Mobil Oil Corp. Dual function catalyst and isomerization therewith. 5,082,984, Cl. 585-481.000.

Brown, Robert D.: *See—*
Raevsky, Vitaly; Zlatkevich, Lev Y.; and Brown, Robert D., 5,082,877, Cl. 523-179.000.

Brown, Robert H.; Liebich, Charles R.; Page, Gregory B.; and Scott, Richard M., to Emergency Signal Systems, Inc. Emergency traffic signal preempt system. 5,083,125, Cl. 340-906.000.

Brown, Thomas H.; Ife, Robert J.; and Leach, Colin A., to SmithKline Beecham Intercredit B.V. 3-carbonyl-4-amino-8-substituted quinoline compounds useful in inhibiting gastric acid secretions. 5,082,841, Cl. 514-235.200.

Brown, Thomas H.: *See—*
Ife, Robert J.; Brown, Thomas H.; and Leach, Colin A., 5,082,848, Cl. 514-313.000.

Browne, Clinton E.: *See—*
Gruber, Harry E.; Browne, Clinton E.; Vgarkar, Bheemaro G.; and Reich, Jack W., 5,082,829, Cl. 514-43.000.

Brownlow, Robert D.: *See—*
Stanley, M. Dale; Brownlow, Robert D.; Rice, John R.; and Sands, Robert E., 5,082,246, Cl. 251-315.000.

Bruchez, Raymond J., Jr.; Mount, George E.; Dixon, James T.; Hagerman, Russell H.; Movick, Wayne K.; Arena, Aldo; and Stewart, Jim D., to United Technologies Corporation; and Grumman Aerospace Corporation. Thrust vectoring exhaust nozzle. 5,082,182, Cl. 239-265.350.

Brunelle, Daniel J., to General Electric Company. Method of preparing hexaalkylguanidinium salts. 5,082,968, Cl. 564-240.000.

Bruni, Ludovico, to Borgo Nova SpA. Pistons for an internal combustion engine. 5,081,968, Cl. 123-193.00P.

Bruno, Salvatore A., to Du Pont de Nemours, E. I., and Company. Ceramic dielectric compositions and method for enhancing dielectric properties. 5,082,811, Cl. 501-134.000.

Bruno, Salvatore A.: *See—*
Bergna, Horacio E.; Bruno, Salvatore A.; and Burn, Ian, 5,082,810, Cl. 501-134.000.

Bruns, Mark W. Chaff spreader. 5,082,186, Cl. 239-682.000.

Brusati, Ernesto; and Garioni, Alessandro, to Vibrosystem S.r.l. Oven for drying or curing a photosensitive material applied as a coating on a substrate. 5,081,773, Cl. 34-205.000.

Brussee, Ann M.: *See—*
Teller, Raymond G.; Brazdil, James F., Jr.; Bartek, Joseph P.; and Brussee, Ann M., 5,082,816, Cl. 502-84.000.

Bruzee, Michelle M.: *See—*
Hoffend, Thomas R.; Bruzee, Michelle M.; and Eddy, Clifford O., 5,082,758, Cl. 430-110.000.

Bruzzone, Charles L.: *See—*
Piotrowski, Chester; Bruzzone, Charles L.; T050832716g-Long; and McAllister, Jerome W., 5,083,112, Cl. 340-572.000.

Bryant, Donald; and Archer, Thomas K. Cut-in repair coupling. 5,082,313, Cl. 285-15.000.

Bryson, Robert A., to AM International Incorporated. Method and apparatus for forming sheet material assemblages. 5,082,256, Cl. 270-55.000.

BS&B Safety Systems, Inc.: *See—*
Farwell, Stephen R.; and Mundt, Arnold L., 5,082,133, Cl. 220-89.200.

Buchanan, Ronnie J., to Halliburton Company. Measuring water content by neutron thermalization. 5,083,029, Cl. 250-390.050.

Buchecker, Richard; Fromm, Hans-Jurgen; Kelly, Stephen; and Schadt, Martin, to Hoffmann-La Roche Inc. Liquid crystalline esters. 5,082,589, Cl. 252-299.630.

Bucher, Robert, to Sulzer Brothers Limited. Pneumatic threading-in tubes for repairing warp yarn breaks in a weaving machine. 5,082,030, Cl. 139-35.000.

Bull S.A.: *See—*
Berneur, Claude; and Boiteau, Jean-Pierre, 5,081,949, Cl. 118-63.000.
Chantraine, Philippe; and Zorrilla, Marta, 5,082,718, Cl. 428-209.000.

Bunger, James W.; Ryu, Hoil; and Devineni, Prasad A. V., to University of Utah. Apparatus and process for the production of acetylene. 5,082,644, Cl. 423-497.000.

Bunin, Leonid, to Merck & Co., Inc. Child resistant unit dose package. 5,082,114, Cl. 206-539.000.

Buntzen, Rodney R.; and Hammond, Robert R. Resonance damage process. 5,081,900, Cl. 89-1.110.

Burd, John F.; Dyminski, John W.; and Marinkovich, Vincent A., to Mast Immunosystems, Inc. Attenuator to suppress extraneous light in luminescent specific-binding assays. 5,082,768, Cl. 435-7.920.

Burdoin, Robert B., to Honeywell, Inc. Canard based high angle of attack air data sensor. 5,083,279, Cl. 364-435.000.

Burger, Raymond. Dehydration press. 5,082,562, Cl. 210-401.000.

Burgess, Lloyd W., Jr.; and Goldman, Don S., to University of Washington, The Board of the; and Battelle Development Corporation. Thin-film spectroscopic sensor. 5,082,629, Cl. 422-82.110.

Burk, Gary N., to ABB Process Automation Inc. Color measurement and control of a sheet material. 5,082,529, Cl. 162-198.000.

Burkhardt, Werner: *See—*
Boeck, Wolfgang; Arntz, Dietrich; Prescher, Guenter; and Burkhardt, Werner, 5,082,819, Cl. 502-212.000.

Burkhart, Georg; Fock, Jurgen; and Mohring, Volker, to Th. Goldschmidt AG. Method for the preparation of polyurethane foams. 5,082,868, Cl. 521-114.000.

Burling, Michael R. Front pull grip assembly for archery bow. 5,081,979, Cl. 124-23.100.

Burn, Ian: *See—*
Bergna, Horacio E.; Bruno, Salvatore A.; and Burn, Ian, 5,082,810, Cl. 501-134.000.

Burnette, Herbert M.: *See—*
Wyatt, William B.; Burnette, Herbert M.; Callahan, Joseph G.; and Mevis, Blake A., 5,081,735, Cl. 15-104.920.

Burns, Gary T.; Fontaine, Leslie D.; and Reaoch, Ronald S., to Dow Corning Corporation. Infusible preceramic polymers via ultraviolet treatment in the presence of a reactive gas. 5,082,872, Cl. 522-77.000.

Burns, Hugh D.: *See—*
Heindel, Ned D.; Turizo, Miguel; Burns, Hugh D.; and Balasubramanian, Venkataraman, 5,082,964, Cl. 558-270.000.

Burris, William A. Compact contact lens purification system using ozone generator. 5,082,558, Cl. 210-167.000.

Burstell, Helmut: *See—*
Sohn, Erich; Handte, Reinhard; Mildenberger, Hilmar; Burstell, Helmut; Bauer, Klaus; and Bieringer, Hermann, 5,082,949, Cl. 548-378.000.

Burton Mechanical Contractors: *See—*
Grooms, John M.; and Jones, Mark A., 5,082,238, Cl. 251-61.500.

Bush, James H.; and Clark, Alan C., to Lubrizol Corporation, The. Flotation process using metal salts of phosphorus acids. 5,082,554, Cl. 209-166.000.

Busker, L. H.: *See—*
Pulkowski, Jeffrey H.; Macklem, Elizabeth A.; and Busker, L. H., 5,082,533, Cl. 162-359.000.

Busse, Ingeborg: *See—*
Sedlemeier, Peter; Busse, Ingeborg; and Mair, Eduard, 5,083,239, Cl. 361-424.000.

Butler, John D.; and Chandler, Jon A., to Federal-Mogul Corporation. Method of making an oil seal having two lips formed by splitting the blank. 5,082,612, Cl. 264-138.000.

Butts, David R.: *See—*
Stewart, Peter V.; and Butts, David R., 5,082,404, Cl. 410-127.000.

C&M Company: *See—*
Rudd, Brodie W., Jr.; and Hannah, James K., 5,081,922, Cl. 100-50.000.

Cabot Corporation: *See—*
Lee, Kam B.; Morgan, Allan C.; Richards, L. Willard; and Puckett, Dan K., 5,082,502, Cl. 134-1.000.

Cadiergue, Joseph; Demoute, Jean-Pierre; and Tessier, Jean, to Roussel Uclaf. Novel cyclopropane carboxylates. 5,082,832, Cl. 514-110.000.

Cahill, Stephen V., to Motorola, Inc. Automatic gain control apparatus and method. 5,083,304, Cl. 375-98.000.

Callahan, Joseph G.: *See—*
Wyatt, William B.; Burnette, Herbert M.; Callahan, Joseph G.; and Mevis, Blake A., 5,081,735, Cl. 15-104.920.

Calvet, Alain P.; Junien, Jean-Louis; Pascal, Yves R.; Pascaud, Xavier B.; and Roman, Francois J., to Jouveinal S.A. Benzodiazepines and applications in therapeutic practice. 5,082,937, Cl. 540-496.000.

Camden Industries, Inc.: *See—*
Greitzer, Steven; and Thomas, Paul, 5,081,956, Cl. 119-19.000.

Cammons, Ray R.; Carlisle, A. Wallace; and Lampert, N. R., to AT&T Bell Laboratories. Optical fiber connecting device including attenuator. 5,082,345, Cl. 385-60.000.

Campagnolo S.r.l.: *See—*
Romano, Antonio, 5,081,883, Cl. 74-594.600.

Campbell, Henry F.: *See—*
Huang, Fu-Chich; Campbell, Henry F.; and Learn, Keith S., 5,082,849, Cl. 514-314.000.

Campbell, John E.: *See—*
Bailey, Thomas F.; and Campbell, John E., 5,082,020, Cl. 137-533.210.

Campbell, Ralph: *See—*
LaMantia, Philip J.; Hardick, George; and Campbell, Ralph, 5,081,923, Cl. 101-32.000.

Campbell, Timothy J.: *See—*
Thompson, Christopher M.; Campbell, Timothy J.; and Gipson, Billy P., 5,081,849, Cl. 62-262.000.

Campbell, William H.: *See—*
Revis, Anthony; and Campbell, William H., 5,082,735, Cl. 428-412.000.

Campon Pardo, Julio: *See—*
Ribalta Baro, Josep M.; Oranias Olsina, Gloria; and Campon Pardo, Julio, 5,082,969, Cl. 564-349.000.

Canada, Atomic Energy of, Limited: *See—*
Chuang, Karl T., 5,082,647, Cl. 423-584.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of Forestry: *See—*
Sidders, Derek, 5,082,063, Cl. 172-57.000.

Canada Packers Inc.: *See—*
Rohde, Larry A.; Hall, Mark R.; Kroeger, Edward; and Sutherland, Joyce E., 5,082,373, Cl. 374-155.000.

Canon Kabushiki Kaisha: *See—*
Fukushima, Satoru; Takeda, Kenichi; Takeda, Atsushi; Uchikawa, Yoshio; and Hasegawa, Takashi, 5,083,167, Cl. 355-274.000.
Ichihara, Yoshiro, 5,083,062, Cl. 315-241.00P.
Kawagishi, Hideyuki; Iwamoto, Hirofumi; and Onitsuka, Yoshihiro, 5,082,352, Cl. 359-63.000.
Kusaka, Kensaku; Suzuki, Yoshihiko; Kimura, Shigeo; Hosoi, Atsushi; Adachi, Hiroyuki; and Kinoshita, Masahide, 5,083,168, Cl. 355-285.000.
Tabata, Masayoshi; Kushibiki, Nobuo; and Yoshinaga, Yoko, 5,082,358, Cl. 359-642.000.
Tsuboi, Takayuki, 5,083,148, Cl. 354-400.000.
Yamamoto, Takao; Eida, Tsuyoshi; and Yamamoto, Mayumi, 5,082,496, Cl. 106-22.000.

Caporiccio, Gerardo: *See—*
Bargigia, Gianangelo; Caporiccio, Gerardo; Tonelli, Claudio; Flabbi, Luciano; and Marchionni, Giuseppe, 5,083,082, Cl. 324-158.00F.

Caradine, Joe K.: *See—*
Baker, David W.; and Caradine, Joe K., 5,082,101, Cl. 194-350.000.

Carcia, Peter F., to Du Pont de Nemours, E. I., and Company. Platinum or palladium/cobalt multilayer on a zinc oxide or indium oxide layer for magneto-optical recording. 5,082,749, Cl. 428-694.000.

Cardiasmenos, Apostle G. Pulse radar and components therefor. 5,083,130, Cl. 342-188.000.

Cardinali, Martin S.: *See—*
Hessel, John F.; Cardinali, Martin S.; and Aronson, Michael P., 5,082,585, Cl. 252-174.120.

Cardinali, Paolo, to I.M.A. Industria Macchine Automatiche S.p.A. Apparatus for receiving blister packs from a product packaging line and for inserting these blister packs into cartons. 5,081,816, Cl. 53-54.000.

Carello Lighting plc: *See—*
Fray, William S.; and Ballinger, David E., 5,083,245, Cl. 362-61.000.

Cargill, Alexander M.: *See—*
Acton, Elizabeth; Cargill, Alexander M.; Ross, Colin F.; and Eatwell, Graham P., 5,082,421, Cl. 415-118.000.

Carl Freudenberg, Firma: *See—*
Wetzel, Michael, 5,082,295, Cl. 277-165.000.

Carlisle, A. Wallace: *See—*
Cammons, Ray R.; Carlisle, A. Wallace; and Lampert, N. R., 5,082,345, Cl. 385-60.000.

Carlson, Don F., to Acme Manufacturing. Integrated buffing and grinding system. 5,081,797, Cl. 51-206.500.

Carman, David C.; Liu, Frederick E.; DeRosa, Anthony J.; and Murphy, Margaret, to Life-Link International, Inc. Pants type garment having a seamless crotch. 5,081,718, Cl. 2-227.000.

Carnell, Joe W. Mechanized shingle applying apparatus. 5,081,815, Cl. 52-747.000.

Carrell, Rebecca S.; van Dijk, Wietse; Goddard, Mervyn R.; and Hayes, John B., to Thomas J. Lipton Co., Division of Conopco, Inc. Food product. 5,082,674, Cl. 426-52.000.

Carrier Corporation: *See—*
Dudley, Kevin F.; Dunshee, Kevin B.; and Paige, Lowell, 5,081,846, Cl. 62-115.000.
Marshall, Arthur J., 5,081,876, Cl. 74-89.210.

Carrol, Alan, to Trenchbond Limited. Apparatus for treatment of material with liquid with stirrer driven vortex flow. 5,082,574, Cl. 210-787.000.

Carroll, James J., Sr.: *See—*
Choi, Tak-Ming; Konrad, Adalbert; Kim, Bang M.; and Carroll, James J., Sr., 5,082,436, Cl. 425-174.80R.

Carroll, Wayne L.: *See—*
Landoll, Donald R.; Harlan, Robert D.; and Carroll, Wayne L., 5,082,064, Cl. 172-178.000.

Carswell, Jenny S.: *See—*
Brown, Alan J.; Shurling, Dickey S., Jr.; and Carswell, Jenny S., 5,082,887, Cl. 524-413.000.

Carter, Jeff C.: *See—*
Platteter, Dale T.; Westfall, Robert S.; and Carter, Jeff C., 5,083,264, Cl. 395-575.000.

Carter-Wallace, Inc.: *See—*
Sofia, R. Duane, 5,082,861, Cl. 514-534.000.

Cartier, George E.; Piretti, Carl P.; and Simon, Robert H. M., to Monsanto Company. Method of forming a bilayer glazing panel. 5,082,515, Cl. 156-212.000.

Cartier, Paul K., III: *See—*
Farnsworth, Vincent R.; and Cartier, Paul K., III, 5,082,788, Cl. 436-89.000.

Casals-Stenzel, Jorge: *See—*
Weber, Karl-Heinz; Harreus, Albrecht; Casals-Stenzel, Jorge; Muacevic, Gojko; Troger, Wolfgang; and Walther, Gerhard, 5,082,839, Cl. 514-220.000.

Case Western Reserve University: *See—*
Berridge, Marc S., 5,082,980, Cl. 568-917.000.

Casio Computer Co., Ltd.: *See—*
Takasu, Akihide; and Sagisaka, Atsushi, 5,083,218, Cl. 358-473.000.

Cassella Aktiengesellschaft: *See—*
Engelhardt, Friedrich; and Ebert, Gerlinde, 5,082,059, Cl. 166-308.000.

Castolin S.A.: *See—*
Simm, Wolfgang; and Steine, Hans-Theo, 5,082,179, Cl. 239-80.000.

Caswell, Frederick A.; and Caswell, Oscar O. System for preventing loss of water from the water line of a building. 5,082,018, Cl. 137-357.000.

Caswell, Oscar O.: *See—*
Caswell, Frederick A.; and Caswell, Oscar O., 5,082,018, Cl. 137-357.000.

Caterpillar Inc.: *See—*
Grassi, John A.; and Stevens, Samuel B., 5,081,952, Cl. 118-500.000.
Kyrtsos, Christos T.; and Worrell, Dean A., 5,082,071, Cl. 177-25.140.
McWilliams, O. Dean, 5,081,839, Cl. 60-468.000.
Smith, Aaron L.; and Feldman, Mark E., 5,081,836, Cl. 60-280.000.

Cathey, David A., to Micron Technology, Inc. Addition of silicon tetrabromide to halogenated plasmas as a technique for minimizing photoresist deterioration during the etching of metal layers. 5,082,524, Cl. 156-643.000.

Caufman, Robert L. Semi-buoyant composite aircraft with non-rotating aerostat. 5,082,205, Cl. 244-025.000.

Cavanah, Jack A., to Pioneer Hi-Bred International, Inc. Inbred corn line PHN37. 5,082,991, Cl. 800-200.000.

Cavill, David. Method for the touch up of scratched painted metal products. 5,082,692, Cl. 427-142.000.

Cegelec: *See—*
Jarret, Bertrand; and Legrand, Joel, 5,082,377, Cl. 385-60.000.

Cekander, John W.; Redder, Doug J.; and Waldron, Chris R., to Prince Corporation. Visor rod mount. 5,082,322, Cl. 296-97.900.

Celii, Francis G.: *See—*
Purdes, Andrew J.; and Celii, Francis G., 5,082,522, Cl. 156-612.000.

Centro Sviluppo Settori Impiego S.r.l.: *See—*
Bonvini, Alberto; and Mascia, Francesco, 5,082,124, Cl. 211-153.000.

Century Products Company: *See—*
Sedlack, Mark, 5,082,325, Cl. 297-250.000.

Cerri, Alberto: *See—*
Farina, Carlo; Pinza, Mario; Cerri, Alberto; and Parravicini, Francesco, 5,082,939, Cl. 544-239.000.

Chalom, Joseph: *See—*
Mahuzier, Georges; Chalom, Joseph; Farinotti, Robert; and Tod, Michel, 5,082,942, Cl. 546-66.000.

Chamberlain, Neal C.: *See—*
Hurliman, Russell J.; Becicka, Kenneth F.; and Chamberlain, Neal C., 5,082,319, Cl. 294-119.100.

Champion, Donald H.: *See—*
Su, Wei-Yang; Primeaux, Dudley J., II; and Champion, Donald H., 5,082,917, Cl. 528-68.000.

Chan, Hiang C.; Fazan, Pierre; and Liu, Yauh-Ching, to Micron Technology, Inc. Method of making stacked textured container capacitor. 5,082,797, Cl. 437-52.000.

Chan, Marie S., to Milliken Research Corporation. Polymeric materials useful for sizing synthetic yarns to be used in water jet weaving. 5,082,896, Cl. 524-823.000.

Chance, Britton, to Performance Predictions, Inc. Methods and apparatus for using nuclear magnetic resonance to evaluate the muscle efficiency and maximum power of a subject during locomotion. 5,081,991, Cl. 128-653.200.

Chandler, Jon A.: *See*—
Butler, John D.; and Chandler, Jon A., 5,082,612, Cl. 264-138.000.
Chang, Houn I. Adjusting device for a frame product. 5,082,230, Cl. 248-476.000.
Chang, Jia-Hwang: *See*—
El-Ayat, Khaled A.; and Chang, Jia-Hwang, 5,083,083, Cl. 324-158.00R.
Chang, Laurence W.; Anderson, Larry S.; and Ley, David A., to American Cyanamid Company. Surface-modified polyacrylonitrile substrates. 5,082,904, Cl. 525-355.000.
Chang, Yun S.; and Kim, Dong J., to Korea Heavy Industries & Construction Co., Ltd. Method for manufacturing a vessel for storing radioactive waste. 5,082,694, Cl. 427-239.000.
Chantraine, Philippe; and Zorrilla, Marta, to Bull S.A. Method for depositing an insulating layer on a conductive layer of a multi-layer connection board of one very large scale integrated circuit. 5,082,718, Cl. 428-209.000.
Chapman, Russell R., to Aflatoxin Limited Partnership. Method for detoxifying foodstuffs. 5,082,679, Cl. 426-312.000.
Charnitski, George A.: *See*—
Corona, Stephen C.; Charnitski, George A.; Lehman, Richard F.; and Urso, Charles J., 5,083,159, Cl. 355-208.000.
Chason, Marc K.; Kellen, Robert A.; Ooi, Leng H.; and Revtai, George, to Motorola, Inc. Inductor structure with integral components. 5,083,236, Cl. 361-401.000.
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Chemetics International Company, Ltd.: *See*—
Al-Samadi, Riad A.; and Li Kwok Cheong, Cheung K., 5,082,645, Cl. 423-531.000.
Chen, Liang-Tsai. Light marker for fishing rod. 5,083,249, Cl. 362-191.000.
Chen, Shing-Huei. Garment hanger with adjustable clamping crossbar. 5,082,152, Cl. 223-89.000.
Chen, Tzung-Wen. Pepper grinder. 5,082,190, Cl. 241-169.100.
Cheney, Michael C.: *See*—
Melnik, Joseph; Cheney, Michael C.; and Vargas, Anthony, 5,082,661, Cl. 424-401.000.
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Cheresnowsky, Michael J.; and Hoffman, Timothy J., to GTE Products Corporation. Removal of potassium from ammonium molybdate. 5,082,637, Cl. 423-55.000.
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Appelbaum, Jerachmiel Y.; Chevion, Mordechai; and Uretzky, Gideon, 5,082,851, Cl. 514-332.000.
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Holtermann, Dennis L., 5,082,988, Cl. 585-739.000.
Chevron Research Company: *See*—
Miller, Stephen J., 5,082,986, Cl. 585-667.000.
Chevron Research and Technology Company: *See*—
Hsieh, C. Richard; and Gloyn, A. John, 5,082,990, Cl. 585-467.000.
Ostrander, William J., 5,083,297, Cl. 367-36.000.
Reynolds, Bruce E.; Bea, Donald A.; and Bachtel, Robert W., 5,082,551, Cl. 208-100.000.
Chiba City & Tsukishima Kikai Kabushiki Kaisha: *See*—
Ishida, Takashi; Ueda, Yoshikazu; Kubota, Teruji; Igarashi, Misao; Tanaka, Norichika; and Kamijo, Yasuhiko, 5,081,937, Cl. 110-246.000.
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Nishida, Tetsuji; Saito, Shinji; and Chino, Naoyoshi, 5,082,729, Cl. 428-329.000.
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Onodera, Kaoru; Ohbayashi, Keiji; Okumura, Mitsuhiro; and Chino, Shigeo, 5,082,765, Cl. 430-377.000.
Chisso Corporation: *See*—
Kuroda, Takashi; Yamada, Kazuhiro; Ishibashi, Tadao; Hayashida, Suetou; Kimura, Kyoichiro; and Sameshima, Masaru, 5,082,900, Cl. 525-211.000.
Cho, In-Seop: *See*—
Muchowski, Joseph M.; and Cho, In-Seop, 5,082,950, Cl. 548-453.000.
Muchowski, Joseph M.; and Cho, In-Seop, 5,082,951, Cl. 548-453.000.
Choi, Tak-Ming; Konrad, Adalbert; Kim, Bang M.; and Carroll, James J., Sr., to General Electric Company. Apparatus for deforming thermoplastic material using RF heating. 5,082,436, Cl. 425-174.80R.
Chomel, Rodolphe: *See*—
Lemaire, Marc; Guy, Alain; Foos, Jacques; Guyon, Vincent; and Chomel, Rodolphe, 5,082,955, Cl. 549-349.000.
Chong, Teek F.; and Ito, Takahiro, to Kabushiki Kaisha Toshiba. CMOS semiconductor integrated circuit device. 5,083,179, Cl. 357-42.000.
Chou, Chai-Jing; Smith, Gregory M.; and Farah, Hani, to Dow Chemical Company, The. Filled thermoplastic molding compositions. 5,082,890, Cl. 524-451.000.
Chow, Christopher V.: *See*—
Jones, Lloyd G.; Yeh, Charles S.; and Chow, Christopher V., 5,082,052, Cl. 166-51.000.
Christensen, Henning J., to Hickman, Williams & Company. Method and apparatus for controlling the composition of a molten metal bath. 5,082,044, Cl. 164-4.100.
Christiansen, Ole M.: *See*—
Barlow, Peter B.; and Christiansen, Ole M., 5,082,681, Cl. 426-495.000.
Chuang, Karl T., to Canada, Atomic Energy of, Limited. Production of hydrogen peroxide. 5,082,647, Cl. 423-584.000.
Church & Dwight Co., Inc.: *See*—
Kirschner, Lawrence; Lajoie, Michael S.; and Spears, William E., Jr., 5,081,799, Cl. 51-410.000.
Ciba-Geigy Corporation: *See*—
Bentz, Rolf, 5,082,475, Cl. 55-68.000.
Faupel, Daniel M.; and Righetti, Pier G., 5,082,548, Cl. 204-299.00R.
Karrer, Friedrich; and Rindlisbacher, Alfred, 5,082,860, Cl. 514-486.000.
Meier, Kurt, 5,082,952, Cl. 549-3.000.
Circulation Research Limited: *See*—
Kitney, Richard I.; Straughan, Keith; and Rothman, Martin T., 5,081,993, Cl. 128-661.080.
Citterio, Giorgio; and Hartmeier, Werner, to Rieter Machine Works, Ltd. Monitoring apparatus. 5,083,298, Cl. 367-96.000.
Clark, Alan C.: *See*—
Bush, James H.; and Clark, Alan C., 5,082,554, Cl. 209-166.000.
Clark, Charles A., Jr.; Kuo, Wen T.; and Wu, Hyon O., to Square D Company. Adaptive stepper. 5,083,003, Cl. 219-110.000.
Clark, Jon R.: *See*—
Veenstra, Kevin C.; and Clark, Jon R., 5,083,231, Cl. 360-133.000.
Clark, Keith S., to OSI Security Devices. Programmable individualized security system for door locks. 5,083,122, Cl. 340-825.320.
Clark, Richard H.; and Long, John D., to Deere & Company. Depth adjusting device for a furrow opener. 5,081,942, Cl. 111-136.000.
Clark, Stephen S.; and Palmer, Brian L., to Dwyer Instruments, Inc. Stand-on type resistance tester for electrostatic dissipating shoe equipped persons. 5,083,092, Cl. 324-693.000.
Clark, Whaite M.: *See*—
Anderson, Karl P.; Clark, Whaite M.; Yu, Poli C.; and Moyle, Richard T., 5,082,698, Cl. 427-386.000.
Clasen, Heinrich. Grinding body and manufacturing procedure therefor. 5,081,798, Cl. 51-273.000.
Class OHG: *See*—
Ernst, Klinger; and Heinrich, Isfort, 5,082,189, Cl. 241-158.000.
Clavel, Jean-Louis: *See*—
Wakselman, Claude; Tordeux, Marc; Langlois, Bernard; Clavel, Jean-Louis; and Nantermet, Roland, 5,082,945, Cl. 548-110.000.
Claxton, Gerald L.: *See*—
Ream, Michael D.; and Claxton, Gerald L., 5,082,085, Cl. 182-2.000.
Clenet, Alain J-M., to Asha Corporation. Vehicle vent. 5,081,912, Cl. 454-136.000.
Cliffe, Ian A., to John Wyeth and Brother Limited. Pyrazinyl and pyridazinyl ethers. 5,082,843, Cl. 514-253.000.
Clink, Mason L. Diver tow vessel apparatus. 5,082,464, Cl. 440-6.000.
Cloud, Charles E., to Cloud Corporation. Method and apparatus for manufacture and packaging of filter packs for use in a brew basket. 5,081,819, Cl. 53-453.000.
Cloud Corporation: *See*—
Cloud, Charles E., 5,081,819, Cl. 53-453.000.
Cobb, Jerry. Fishing lure article. 5,081,786, Cl. 43-44.890.
Cofer, John I., IV: *See*—
Whitford, Robert P.; and Cofer, John I., IV, 5,083,040, Cl. 290-52.000.
Coffin-Beach, David: *See*—
Apelian, Henry M.; Coffin-Beach, David; and Huq, Abu S., 5,082,863, Cl. 514-618.000.
Cogema-Compagnie Generale Des Matieres Nuclearires: *See*—
Lemaire, Marc; Guy, Alain; Foos, Jacques; Guyon, Vincent; and Chomel, Rodolphe, 5,082,955, Cl. 549-349.000.
Cogifer (Cie Generale d'Installations Ferroviaires), S.A.: *See*—
Testart, Gerard, 5,082,214, Cl. 246-385.000.

Cole-Parmer Instrument Company: *See*—
Soderquist, Charles E.; and Hellstrom, Steven P., 5,082,429, Cl. 417-477.000.

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Loth, Myriam; Blanvalet, Claude; and Valange, Baudouin, 5,082,584, Cl. 252-122.000.

Collector's Products Corporation: *See*—
Connor, Charles M., Jr.; Connor, John K.; and Stroup, H. B., Jr., 5,082,122, Cl. 211-41.000.

Colling, Edwin L., Jr.: *See*—
Nolte, David G.; Haskin, Helen K.; and Colling, Edwin L., Jr., 5,082,787, Cl. 436-31.000.

Colt's Manufacturing Company Inc.: *See*—
Lishness, Bryant L.; and Scirica, Paul A., 5,081,780, Cl. 42-69.010.

Combepine, Michel: *See*—
Jimenez, Antonio; and Combepine, Michel, 5,083,069, Cl. 318-558.000.

Combi Corporation: *See*—
Takahashi, Takehiko; and Shimizu, Yuji, 5,081,724, Cl. 5-136.000.

Command International, Inc.: *See*—
Willey, Alan P.; and Radford, Neal T., 5,082,544, Cl. 204-270.000.

Commissariat a l'Energie Atomique: *See*—
Decossas, Jean-Louis; Vareille, Jean-Claude; Barthe, Jean; and Portal, Guy, 5,083,028, Cl. 250-390.030.

Conley, William P.; and Foresi, Anthony. Electromechanical swing trainer. 5,082,283, Cl. 273-186.00A.

Connell Limited Partnership: *See*—
Rante, Anthony, 5,081,860, Cl. 72-405.000.

Connor, Charles M., Jr.; Connor, John K.; and Stroup, H. B., Jr., to Collector's Products Corporation. Unit for displaying a plurality of items in holders. 5,082,122, Cl. 211-41.000.

Connor, John K.: *See*—
Connor, Charles M., Jr.; Connor, John K.; and Stroup, H. B., Jr., 5,082,122, Cl. 211-41.000.

Consolidated Natural Gas Service Company, Inc.: *See*—
Swenson, Paul F., 5,081,977, Cl. 123-527.000.

Consulier Industries, Inc.: *See*—
Shaffer, James E., 5,081,885, Cl. 74-640.000.

Continental Aktiengesellschaft: *See*—
Spitz, Wolfgang, 5,082,040, Cl. 152-379.300.

Cook, Alan F.: *See*—
Brakel, Christine L.; Cook, Alan F.; and Vuocolo, Edmund, 5,082,830, Cl. 514-44.000.

Cook, Phillip M.; and Kelley, Stephen S., to Eastman Kodak Company. Grafted cellulose esters containing a silicon moiety. 5,082,914, Cl. 527-300.000.

Cook, William A.; Fearnot, Neal E.; and Geddes, Leslie A., to Purdue Research Foundation. Exercise responive cardiac pacemaker. 5,081,988, Cl. 128-419.0PG.

Cooke, Anthony W.; and Bader, Monika E., to Hoechst Celanese Corporation. Producing a copolyester from a lower dialkyl ester of terephthalic acid, a glycol and a dicarboxylic acid. 5,082,731, Cl. 428-362.000.

Cooke, Richard C.: *See*—
Iyer, S. Raja; Johnson, Calvin K.; and Cooke, Richard C., 5,082,876, Cl. 523-145.000.

Cookson Company, The: *See*—
Wardlaw, Russell, 5,082,316, Cl. 292-201.000.

Cooper, Edward L.: *See*—
Poupard, Mark D.; and Cooper, Edward L., 5,083,070, Cl. 318-568.100.

Cooper, Inc.: *See*—
Holder, Tommie, 5,082,330, Cl. 299-37.000.

Cooper Industries, Inc.: *See*—
Dulin, Francis H., 5,082,806, Cl. 501-92.000.
Juros, Karel B. F., 5,081,769, Cl. 30-261.000.

Cooper Tire & Rubber Company: *See*—
Klose, Karl W.; and Benjamin, Gary H., 5,082,519, Cl. 156-396.000.

Coors Porcelain Company: *See*—
Roy, Donald W.; Hastert, James L.; Green, Kenneth E.; Courbrough, Lawrence E.; and Trujillo, Aurielo, 5,082,739, Cl. 428-450.000.

Copa, William M.: *See*—
Beula, David A.; Momont, Joseph A.; and Copa, William M., 5,082,571, Cl. 210-739.000.

Coppus Engineering Corporation: *See*—
Munroe, Richard W., 5,083,011, Cl. 219-496.000.

Corbitt, John D., Jr.; Kuzmick, Kenneth M.; O'Hearn, Stephanie L.; and Santilli, Albert N., to Surgical Concepts, Inc. Surgical instrument holder. 5,082,111, Cl. 206-363.000.

Cordova-Plaza, Amado; and Shaw, Herbert J., to Leland Stanford Junior University, The Board of Trustees of the. Bi-domain two-mode single crystal fiber devices. 5,082,349, Cl. 385-2.000.

Cornell, Ron A., to Syracuse Utilities, Inc. Drilling machine for drilling holes in rocks. 5,082,068, Cl. 173-22.000.

Corona, Stephen C.; Charnitski, George A.; Lehman, Richard F.; and Urso, Charles J., to Xerox Corporation. Process for initial alignment of document illuminator. 5,083,159, Cl. 355-208.000.

Corso, Anthony J.: *See*—
Phillips, Thomas S.; and Corso, Anthony J., 5,082,963, Cl. 558-33.000.

Cosenza, Frank J., to VSI Corporation. Self locking panel fastener with device for visually indicating whether fastener is locked. 5,082,406, Cl. 411-105.000.

Cota, Albert O.; and Reed, John J. Self-sustaining power module. 5,082,505, Cl. 136-253.000.

Coult, David G.; Masland, Joel C.; and Milbrodt, Michele A., to AT&T Bell Laboratories. Isolated optical coupler. 5,082,343, Cl. 385-34.000.

Courbrough, Lawrence E.: *See*—
Roy, Donald W.; Hastert, James L.; Green, Kenneth E.; Courbrough, Lawrence E.; and Trujillo, Aurielo, 5,082,739, Cl. 428-450.000.

Cousin, Michel: *See*—
Boinot, Francois; Cousin, Michel; Hochin, Andre ; and Meyer, Nicolas, 5,082,918, Cl. 528-140.000.

Covington, Michael J.; and Orsborn, Jesse H., to J. I. Case Company. Method of accessing adjacent harvesting units of a cotton harvester. 5,081,828, Cl. 56-28.000.

Cowell, David C.: *See*—
Newman, Jeffrey D.; Pirzad, Ramin; Cowell, David C.; and Dowman, Antony A., 5,082,540, Cl. 204-153.130.

Cox, Michael F. Display bracelet. 5,081,852, Cl. 63-3.000.

Craven, Paul t.; and Fisher, Richard A., to Quadrax Corporation. Multi-directional, light-weight, high-strength interlaced material and method of making the material. 5,082,701, Cl. 428-34.500.

Crawley, Clifton J., Jr.: *See*—
Schwarz, Frederick M.; Crawley, Clifton J., Jr.; and Rauseo, Anthony F., 5,081,830, Cl. 60-39.020.

Cray Research, Inc.: *See*—
Bartilson, Bradley W., 5,083,194, Cl. 357-81.000.

CRI International, Inc.: *See*—
Welch, J. Gary; and Ellingham, Robert E., 5,082,552, Cl. 208-216.00R.

Crisp, Charles D. Lift apparatus for use with a chair. 5,082,327, Cl. 297-313.000.

Cristiani, Giancarlo; and D'Odorico, Danilo, to Danieli & C. Officine Meccaniche SpA. Device to heat the leading end of aluminium ingots to be extruded. 5,082,250, Cl. 266-44.000.

Critikon, Inc.: *See*—
Yelderman, Mark; Goldberger, Daniel S.; and Braig, James R., 5,081,998, Cl. 128-719.000.

Crocker, James F., to Massey, George W., a part interest. Volumetric packaging apparatus for frozen food and method. 5,082,032, Cl. 141-1.000.

Cromer, Marsha J. Hand-held foot callus remover. 5,082,009, Cl. 132-76.400.

Crompton Design Manufacturing Limited: *See*—
Crompton, Geoffrey, 5,082,494, Cl. 106-18.120.

Crompton, Geoffrey, to Crompton Design Manufacturing Limited. Materials for and manufacture of fire and heat resistant components. 5,082,494, Cl. 106-18.120.

Crosfield Electronics Limited: *See*—
Evelin, Graham C., 5,083,195, Cl. 358-10.000.

Cross, Kenneth M., to 3C Chemical Labaratories Pty Ltd. Dispenser and pump type containers. 5,082,149, Cl. 222-162.000.

Cross, Paul C.: *See*—
Hansen, Craig N.; and Cross, Paul C., 5,081,966, Cl. 123-190.00B.

Croston, Leon J. All wing aircraft. 5,082,204, Cl. 244-126.000.

Crouzet, Pierre G.; and Martens, Andre J. Process for controlling hydrocarbon steam cracking system using a spectrophotometer. 5,082,985, Cl. 585-501.000.

Crowther, Dale A.; and Isham, William R., to Isham, William R. Display mounted document holder. 5,082,235, Cl. 248-918.000.

Cruickshank, Kenneth A., to Amoco Corporation. Diagnostic reagents made by attaching cytidine containing nucleic acid probes to amino functionalized solid supports by bisulfite mediated transamination. 5,082,935, Cl. 536-27.000.

Cryovita Laboratories, Inc.: *See*—
Leaf, Jerry D.; and Federowicz, Michael G., 5,082,831, Cl. 514-56.000.

CSA Division of Lake Industries, Inc.: *See*—
Higgins, Irwin R.; and Denton, Mark S., 5,082,570, Cl. 210-683.000.

Csorgei, Janos: *See*—
Molnar, Csaba; Hajos, Gyorgy; Szporny, Laszlo; Toth, Jozsef; Kiraly, Arpad; Boor nee Mezei, Anna; Csorgei, Janos; Szekely, Kristina; Forgacs, Lilla; Fekete, Gyorgy; Herenyi, Bulcsu; Holly, Sandor; and Szunyog, Jozsef, 5,082,835, Cl. 514-180.000.

CTC Corporation: *See*—
Wood, Edward T.; Surgnier, David H.; and Brooks, Robert T., 5,082,062, Cl. 166-382.000.

Cucurullo, Albert J. Roller skate. 5,082,300, Cl. 280-11.220.

Culver Electronic Sales, Inc.: *See*—
Draffen, Gary T., 5,082,083, Cl. 181-150.000.

Cummins Electronics Company, Inc.: *See*—
Wollscheidt, Allen N.; and Porter, David P., 5,082,457, Cl. 439-620.000.

Cummins Engine Company, Inc.: *See*—
Miller, Paul R., 5,082,479, Cl. 55-523.000.

Cur, Nihat O.; Kruck, Richard W.; White, William S.; and Kirby, David B., to Whirlpool Corporation. Vacuum insulation system for insulating refrigeration cabinets. 5,082,335, Cl. 312-401.000.

Curry, Gregory T. Austempered ductile iron gear and method of making it. 5,082,507, Cl. 148-2.000.

Custom Electric Manufacturing Company: *See*—
Edwards, Robert H., 5,083,012, Cl. 219-553.000.

Custom Metalcraft Inc.: *See*—
Wiese, Delmar R., 5,082,236, Cl. 251-5.000.

Cutter, Louis A.; and Godfrey, John J., to Aristech Chemical Corporation. Method of transferring latex particles from an aqueous to an organic phase and making an impact resistant acrylic sheet. 5,082,879, Cl. 523-336.000.

Czachor, Robert P.: *See—*
Husain, Sifarat S.; Kroger, Gerard P.; and Czachor, Robert P., 5,082,424, Cl. 416-158.000.
Czwartacki, Edward J. Flexible closure device. 5,081,746, Cl. 24-17.00B.
Dagard, Philippe, to Framatome. Method and device for modifying the concentration of the soluble poison contained in the cooling fluid of the primary circuit of a nuclear reactor. 5,082,618, Cl. 376-219.000.
Dahl, Robert M. Holder for RCs, schedule guide, and magazine employs transparent rigid sheets and temporary fasteners. 5,082,229, Cl. 248-444.100.
Dahlin, Dale L.; and Dahlin, Edward D. Spray nozzle selector device. 5,082,183, Cl. 239-393.000.
Dahlin, Edward D.: *See—*
Dahlin, Dale L.; and Dahlin, Edward D., 5,082,183, Cl. 239-393.000.
Dahm, Rolf-Wolfram; Vollmer, Hermann; and Wolf, Erwin, to Mercedes-Benz AG. Bucket tappet for an internal combustion engine with overhead camshaft. 5,081,976, Cl. 123-90.480.
Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Sato, Toshiyuki; Hashimoto, Hiroyuki; and Watanabe, Kazuo, 5,083,156, Cl. 355-91.000.
Daido Machinery Ltd.: *See—*
Ito, Yukio; Akazawa, Tadashi; and Noguchi, Takao, 5,081,858, Cl. 72-43.000.
Daido Tokushuko Kabushiki Kaisha: *See—*
Ito, Yukio; Akazawa, Tadashi; and Noguchi, Takao, 5,081,858, Cl. 72-43.000.
Daiichi Denso Buhin Co., Ltd.: *See—*
Takano, Tsunesuke, 5,082,452, Cl. 439-206.000.
Daikin Industries, Inc.: *See—*
Obata, Koei; and Kai, Takashige, 5,083,287, Cl. 395-126.000.
Daikin Industries, Ltd.: *See—*
Ochi, Joji, 5,083,052, Cl. 310-64.000.
Daiku, Yoshiharu: *See—*
Oinuma, Hitoshi; Yamanaka, Motosuke; Miyake, Kazutoshi; Hoshiko, Tomonori; Minami, Norio; Shoji, Tadao; Daiku, Yoshiharu; Sawada, Kohei; and Nomoto, Kenichi, 5,082,850, Cl. 514-317.000.
Daimler-Benz AG: *See—*
Braunig, Dieter; and Willikens, Axel, 5,082,994, Cl. 174-87.000.
Kubler, Helmut; and Kubler, Freidrich, 5,083,078, Cl. 323-268.000.
Schutzner, Paul; and Fritz, Martin, 5,082,309, Cl. 280-714.000.
Dainippon Pharmaceutical Co., Ltd.: *See—*
Shirai, Yoshimi; Sogo, Kiyomi; Nakamura, Yoshihiko; Fujioka, Hiroshi; and Makita, Hirokazu, 5,082,669, Cl. 424-495.000.
D'Alayer de Costemore d'Arc, Stephane M., to Staar S. A. Single-handle faucet. 5,082,023, Cl. 137-636.300.
Daly, Joseph M.: *See—*
Bansleben, Donald A.; Daly, Joseph M.; and Zavadsky, Emil, 5,082,878, Cl. 523-203.000.
Daly, Paul D.; and McArthur, Robert A., to Siemens Automotive L.P. Engine throttle blade sealing. 5,081,972, Cl. 123-337.000.
Damiano, John; and Griffin, Richard C., to Pfizer Inc. Process for the preparation of high purity calcium titanate hydrates and product produced thereby. 5,082,648, Cl. 423-598.000.
Danieli & C. Officine Meccaniche SpA: *See—*
Cristiani, Giancarlo; and D'Odorico, Danilo, 5,082,250, Cl. 266-44.000.
Poloni, Alfredo, 5,081,818, Cl. 53-446.000.
Danton, Jean-Louis, to Etablissements Compin. Seat support for public transport vehicles and seat equipped with this support. 5,082,320, Cl. 296-63.000.
Dany, Franz-Josef: *See—*
Leupold, Ernst I.; Schonwalder, Karl-Heinz; Fritsche-Lang, Wolfram; Linkies, Adolf; Gohla, Werner; and Dany, Franz-Josef, 5,082,504, Cl. 134-42.000.
Darragh, Charles T., to Solar Turbines Incorporated. Circular heat exchanger having uniform cross-sectional area throughout the passages therein. 5,081,834, Cl. 60-39.511.
Darragh, Charles T., to Solar Turbines Incorporated. Thermal restraint system for a circular heat exchanger. 5,082,050, Cl. 165-81.000.
Darredeau, Bernard, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Process and apparatus for the production of gaseous oxygen with a variable flow by air distillation. 5,082,482, Cl. 62-24.000.
Dart Industries Inc.: *See—*
DeCoster, Pieter K. J., 5,082,135, Cl. 220-93.000.
D'Ascenzo, Frank, Jr. Locking linear actuator. 5,081,910, Cl. 92-20.000.
Daubenmier, John A.: *See—*
Person, Dennis W.; Timte, Frank W.; Daubenmier, John A.; Zielke, John I.; Smith, Rodney B.; and Williams, Roy S., 5,081,886, Cl. 74-866.000.
Daude, Gerard: *See—*
Bravet, Jean-Louis; and Daude, Gerard, 5,082,736, Cl. 428-425.600.
David Sarnoff Research Center, Inc.: *See—*
Prabhu, Ashok N.; and Hang, Kenneth W., 5,082,804, Cl. 501-19.000.
Davies, Julian A.; and Dutremez, Sylvain, to University of Toledo, The. Process for the manufacture of electroceramics such as titanates and zirconates. 5,082,812, Cl. 501-137.000.
Davis, Cecil J.: *See—*
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Davis, Jackie L.: *See—*
Tucker, Richard B.; Davis, Jackie L.; and Lewis, Fielding H., Jr., 5,082,290, Cl. 273-326.000.
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Flasher, Gary L., 5,082,297, Cl. 277-230.000.
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Brooks, Steven D., 5,083,063, Cl. 315-294.000.
Dean, Richard T.: *See—*
Nicolotti, Robert A.; and Dean, Richard T., 5,082,930, Cl. 530-402.000.
Decerprit, Jacques: *See—*
Festal, Didier; Nioche, Jean-Yves; Descours, Denis; Bellemin, Robert; and Decerprit, Jacques, 5,082,859, Cl. 514-456.000.
Decossas, Jean-Louis; Vareille, Jean-Claude; Barthe, Jean; and Portal, Guy, to Commissariat a l'Energie Atomique. Individual measuring device for the neutron dose equivalent. 5,083,028, Cl. 250-390.030.
DeCoster, Pieter K. J., to Dart Industries Inc. Container for storing and dispensing goods. 5,082,135, Cl. 220-93.000.
DeDecker, Mark N.: *See—*
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Deere & Company: *See—*
Clark, Richard H.; and Long, John D., 5,081,942, Cl. 111-136.000.
Parker, Paul D.; and Livesay, Fred C., Jr., 5,082,217, Cl. 248-75.000.
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Boeck, Wolfgang; Arntz, Dietrich; Prescher, Guenter; and Burkhardt, Werner, 5,082,819, Cl. 502-212.000.
Deis, Daniel W.: *See—*
Kemeny, George A.; and Deis, Daniel W., 5,081,901, Cl. 89-8.000.
Delaney, Robert G., Jr. Self-adjusting door stop and catch. 5,082,317, Cl. 292-251.500.
DeLarge, Gregory W., to Plasma Etch. Plasma etching reactor. 5,082,547, Cl. 204-298.390.
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DeMarti, Jack C., Jr., to Eastman Kodak Company. Film transporting apparatus. 5,083,153, Cl. 355-40.000.
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Denton, Mark S.: *See—*
Higgins, Irwin R.; and Denton, Mark S., 5,082,570, Cl. 210-683.000.
DeRespiris, Donald L.; Rudd, Eric J.; and Schue, Carolyn, to EL-TECH Systems Corporation. Process for replenishing metals in aqueous electrolyte solutions. 5,082,538, Cl. 205-140.000.
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Alexandrovich, Peter S.; Derimiggio, John E.; and Wilson, John C., 5,082,883, Cl. 524-109.000.
De Ro, Michel D.; and Hecq, Pierre, to S.A. Constructions Ferroviaires et Metalliques. Railway bogie with articulated side frames. 5,081,934, Cl. 105-168.000.
DeRosa, Anthony J.: *See—*
Carman, David C.; Liu, Frederick E.; DeRosa, Anthony J.; and Murphy, Margaret, 5,081,718, Cl. 2-227.000.
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De Snet, Gabriel, to Isoform. Device for pressing sheet material on an elastic forming die. 5,081,859, Cl. 72-57.000.
Desorcie, James L.; and O'Brien, Michael J., to General Electric Company. UV curable non-toxic epoxysilicone release coating compositions and method. 5,082,686, Cl. 427-54.100.
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Detty, Michael R., to Eastman Kodak Company. Detecting cells using tellurapyrylium dihydroxides. 5,082,771, Cl. 435-38.000.
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DeVries, Ronald A.: *See—*
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Dez, Oliver: *See—*
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Diesel Kiki Co., Ltd.: *See—*
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Dinelli, Michael V. Weight training apparatus. 5,082,260, Cl. 272-123.000.

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Dixon, James T.: *See—*
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Bauer, Hans-Peter; Dobler, Kiaus; and Hachtel, Hansjorg, 5,083,084, Cl. 324-207.190.

D'Odorico, Danilo: *See—*
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Dolan, Donald T.; Durst, Robert T., Jr.; Hubbard, David W.; and Silverberg, Morton, to Pitney Bowes Inc. Modular mailing machine. 5,082,072, Cl. 177-25.150.

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Donnelly, Charles E. Motorcycle safety belt. 5,081,719, Cl. 2-311.000.

Dorazio, Raymond E., to GTE Products Corporation. Ceramic filter. 5,082,480, Cl. 55-523.000.

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Wess, Othmar; Novak, Pavel; Mechnich, Klaus; and Schultheiss, Reiner, 5,081,984, Cl. 128-24.0EL.

Dorn, Michael: *See—*
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Dorris, Gilles, to Pulp and Paper Research Institute of Canada. Process of producing kraft pulping liquor by the oxidation of white liquor in the presence of lime mud. 5,082,526, Cl. 162-30.110.

Dorst, Leendert: *See—*
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Dotzlaf, Joe E.; and Yeh, Wu-Kuang, to Eli Lilly and Company. Process for preparing deacetylcephalosporin C. 5,082,772, Cl. 435-49.000.

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Douglas, John J., to Simplimatic Engineering Company. Modular conveyor beam and method of assembly therefor. 5,082,108, Cl. 198-836.400.

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Chou, Chai-Jing; Smith, Gregory M.; and Farah, Hani, 5,082,890, Cl. 524-451.000.
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Dow Corning Corporation: *See—*
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Burns, Gary T.; Fontaine, Leslie D.; and Reaoch, Ronald S., 5,082,872, Cl. 522-77.000.
Liles, Donald T., 5,082,873, Cl. 522-86.000.
Revis, Anthony; and Campbell, William H., 5,082,735, Cl. 428-412.000.
Sharp, Kenneth G., 5,082,696, Cl. 427-255.000.
Tangney, Thomas J., 5,082,706, Cl. 428-40.000.
VanWert, Bernard; and Houghtaling, Dawn M., 5,082,894, Cl. 524-730.000.
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Dow Corning Toray Silicone Company, Ltd.: *See—*
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Dowa Mining Co., Ltd.: *See—*
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Dowd, James D.; Hilborn, David M.; Weilant, Roy; and Lawassani, Abdolhossein R. Sunshade fastener module for use with modular headliner. 5,082,323, Cl. 296-214.000.

Dowd, Patrick F.; Bartelt, Robert J.; and Wicklow, Donald T., to United States of America, Agriculture. Wind-oriented funnel trap. 5,081,788, Cl. 43-107.000.

Dowman, Antony A.: *See—*
Newman, Jeffrey D.; Pirzad, Ramin; Cowell, David C.; and Dowman, Antony A., 5,082,540, Cl. 204-153.130.

Draffen, Gary T., to Culver Electronic Sales, Inc. Structure wall mounted speaker assembly. 5,082,083, Cl. 181-150.000.

Drappel, Stephan: *See—*
Sacripante, Guerino; McAneney, T. Brian; Drappel, Stephan; Van Kao, Sheau; and Alexandru, Lupu, 5,082,919, Cl. 528-176.000.

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Drees, Herman M.: *See—*
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Drieling, Gerald L. Compressible desk arrangements. 5,081,936, Cl. 108-43.000.

Drory, Eatamar, to Apple Computer, Inc. Compression and expansion technique for digital audio data. 5,083,310, Cl. 381-30.000.

Drotloff, Hansotto: *See—*
Haubs, Michael; Drotloff, Hansotto; and Wildhardt, Juergen, 5,082,565, Cl. 210-650.000.

Drucker, Frank; and Szklany, Craig, to Sensormatic Electronics Corporation. Jamming apparatus for electronic article surveillance systems. 5,083,111, Cl. 340-572.000.

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Du Pont Pixel Systems Limited: *See—*
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Duchesne, Jean-Pierre, to Rhone Poulenc Nutrition Animale. Sulpholenes and processes for their preparation and use. 5,082,953, Cl. 549-53.000.

Dudley, Kevin F.; Dunshee, Kevin B.; and Paige, Lowell, to Carrier Corporation. Control of space heating and water heating using variable speed heat pump. 5,081,846, Cl. 62-115.000.

Dudrey, Denis J.: *See—*
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Duehring, William K.; and Yelverton, Forrest D., to GT Bicycles, Inc. a Calif. Corporation. Changeable dropout assembly. 5,082,303, Cl. 280-288.000.

Dues, Theo, to Gebruder Schmeing GmbH & Co. Apparatus for eliminating deposits of floating fibers. 5,081,737, Cl. 15-316.100.

Duester, Everett L.; Blanchard, Russell O.; and Brower, Harley, to Batts, Inc. Garment clamping hanger. 5,082,153, Cl. 223-96.000.

Dufour, Marcel, to Asten Group, Inc. Papermaking machine and a seamed papermaker's fabric. 5,082,532, Cl. 162-358.000.

Dugan, Michael D.; and Hoeft, Jon L., to Eastman Kodak Company. Method and apparatus for optimizing video recording and reproduction. 5,083,211, Cl. 358-310.000.

Duke University: *See—*
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Dulin, Francis H., to Cooper Industries, Inc. Semi-conducting ceramic. 5,082,806, Cl. 501-92.000.

Dunklee, Douglas M., to United States Surgical Corporation. Package for endoscopic ligating instrument. 5,082,112, Cl. 206-363.000.

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Dunshee, Kevin B.: *See—*
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Du Pont de Nemours, E. I., and Company: *See—*
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Bruno, Salvatore A., 5,082,811, Cl. 501-134.000.
Carcia, Peter F., 5,082,749, Cl. 428-694.000.
Fish, Robert B., Jr.; Rackley, Robert L.; Anderson, Robert K.; and Mainz, Michael H., 5,082,610, Cl. 264-80.000.
Nader, Allan E.; and Rajanbabu, Thaliyil V., 5,082,965, Cl. 558-270.000.
Oswald, Joseph A., Jr., 5,082,462, Cl. 439-851.000.

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Grube, Erwin; Kuhlmann, Walter; and Elges, Friedhelm, 5,082,107, Cl. 198-680.000.

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Dutremez, Sylvain: *See—*
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Dwyer Instruments, Inc.: *See—*
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Dyminski, John W.: *See—*
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E. R. Carpenter Company, Inc.: *See—*
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E-Z-Rect Manufacturing Ltd.: *See—*
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Eaglebrook, Inc.: *See—*
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Eastman Kodak Company: *See—*
Agostinelli, John A.; Hung, Liang-sun; and Mir, Jose M., 5,082,688, Cl. 427-126.300.
Alexandrovich, Peter S.; Derimiggio, John E.; and Wilson, John C., 5,082,883, Cl. 524-109.000.
Altmann, Conrad, 5,083,144, Cl. 346-157.000.
Cook, Phillip M.; and Kelley, Stephen S., 5,082,914, Cl. 527-300.000.
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Eatwell, Graham P.: *See—*
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Eberle, Jurg, to Ferag AG. Hook and loop fastener, flexible band containing such hook and loop fastener and method of using such flexible band. 5,081,748, Cl. 24-442.000.

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Ebert, Richard M.: *See—*
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ECC American Inc.: *See—*
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Edelhoff M.S.T.S. GmbH: *See—*
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Edison Animal Biotechnology Center/Ohio University: *See—*
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Edlund, Leif E.: *See—*
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Eguchi, Kouhei, to NEC Corporation. Capacitance device. 5,083,184, Cl. 357-51.000.

Eguchi, Shuji; Kloosterboer, Johan G.; and Broer, Dirk J., to U.S. Philips Corporation. Glass chromatography capillary with relatively thick coating. 5,082,559, Cl. 210-198.200.

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Eilingsfeld, Heinz: *See—*
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Elges, Friedhelm: *See—*
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Eli Lilly and Company: *See—*
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Hou, Jack; and Feng, I-Pin, 5,081,899, Cl. 84-95.200.

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Olbrich, Michael E.; Jones, Rebecca L.; and Fenstermaker, Roger W., 5,082,987, Cl. 585-737.000.

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Eberle, Jurg, 5,081,748, Cl. 24-442.000.

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Sluga, Robert M.; Watkins, Randolph H.; Fisher, Jerry D.; Berry, Dennis C.; and Eldridge, Milo, 5,082,503, Cl. 134-26.000.
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Holka, Thomas C., 5,082,077, Cl. 180-79.300.
Melotik, Joseph J., 5,082,311, Cl. 280-777.000.
Ording, Leroy E.; and Freitag, Otto W., 5,082,223, Cl. 248-183.000.
Person, Dennis W.; Timte, Frank W.; Daubenmier, John A.; Zielke, John I.; Smith, Rodney B.; and Williams, Roy S., 5,081,886, Cl. 74-866.000.
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Watanabe, Hideomi; Ohno, Mikio; Hashimoto, Hiroshi; and Okita, Tsutomu, 5,082,733, Cl. 428-403.000.
Yanai, Akio; and Nishikawa, Yasuo, 5,082,714, Cl. 428-141.000.

Fuji Xerox Co., Ltd.: *See*—
Fukuda, Yuzuru; Nishikawa, Masayuki; Yagi, Shigeru; and Karakida, Ken-ichi, 5,082,760, Cl. 430-127.000.

Fujibayashi, Kentaro: *See*—
Sasaki, Takao; Fujibayashi, Kentaro; and Sato, Morimasa, 5,083,071, Cl. 318-569.000.

Fujii, Yasuhiro: *See*—
Kanda, Minoru; Komatsu, Mikio; Nunoya, Hidetsugu; Fujii, Yasuhiro; and Abiko, Toshio, 5,083,132, Cl. 343-700.0MS.

Fujimori, Junichi, to Yamaha Corporation. Apparatus for generating musical sound control parameters. 5,081,898, Cl. 84-622.000.

Fujioka, Hiroshi: *See*—
Shirai, Yoshimi; Sogo, Kiyomi; Nakamura, Yoshihiko; Fujioka, Hiroshi; and Makita, Hirokazu, 5,082,669, Cl. 424-495.000.

Fujita, Takashi: *See*—
Matsuura, Mitsuyuki; and Fujita, Takashi, 5,082,818, Cl. 502-119.000.

Fujitsu Limited: *See*—
Kakaguchi, Kazuhiro, 5,082,384, Cl. 400-708.000.
Nagata, Shunichi, 5,082,801, Cl. 437-190.000.
Okajima, Yoshinori, 5,083,294, Cl. 365-200.000.
Takahashi, Yasushi, 5,082,762, Cl. 430-296.000.
Takeda, Shiro; Namiki, Fumihiro; and Yamada, Isamu, 5,083,024, Cl. 250-327.200.
Yamada, Katsuyuki; Maeda, Teruaki; and Nakaya, Yoshichika, 5,083,292, Cl. 365-155.000.

Fujiwara, Mitsuru; Suzuki, Akira; and Okita, Junji, to Hitachi, Ltd. Screw compressing apparatus, rotor temperature control apparatus for screw compressing apparatus and operating control apparatus for screw compressing apparatus. 5,082,427, Cl. 417-292.000.

Fukamachi, Keiko: *See*—
Tagaya, Nobuaki; Kuwahara, Hideyuki; Hashimoto, Takao; Komatsu, Noriko; Fukamachi, Keiko; Maeshima, Tsugio; Ishikawa, Toshihiro; and Ogawa, Tetsuro, 5,082,566, Cl. 210-656.000.

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Uetake, Naohito; Sekine, Ietsugu; Hasimoto, Haruo; Fukasawa, Tetsuo; and Iba, Hajime, 5,082,602, Cl. 252-627.000.

Fukaya, Kensaku: *See*—
Harada, Hidenari; and Fukaya, Kensaku, 5,082,324, Cl. 297-83.000.

Fukuda, Hiroya; Akou, Masayuki; Sawa, Eiji; and Ohashi, Takashi, to Bridgestone Corporation. Method of making an electrically conductive polyurethane foam. 5,082,870, Cl. 521-159.000.

Fukuda, Takeshi; and Mita, Kunihiko, to Shin-Etsu Chemical Co., Ltd. Electroconductive silicone rubber composition and cured silicone rubber article thereof. 5,082,596, Cl. 252-511.000.

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Kohari, Katsuo; Kono, Shinichi; and Fukukura, Masaaki, 5,083,066, Cl. 318-41.000.

Fukumoto, Hidehiro: *See*—
Nakanishi, Hiroaki; Fukumoto, Hidehiro; Shibata, Kuniharu; and Matsumoto, Hidetoshi, 5,082,363, Cl. 356-1.000.

Fukumoto, Masahiro: *See*—
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Fukumoto, Takehiko; and Yamamoto, Akira, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of an alkynyl compound. 5,082,961, Cl. 556-466.000.

Fukushima, Akira; Makino, Nobuhiko; Uchida, Kiyoyuki; Inoue, Hideo; and Sakai, Kazunori, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Anti-skid control system for use in motor vehicle. 5,082,333, Cl. 303-96.000.

Fukushima, Masao; Murakami, Kei; Kuriyama, Shigeru; Nakamura, Yozo; Maeda, Yuji; Nakamura, Kenichi; Mashino, Keiichi; and Kadomukai, Yuzo, to Nissan Motor Company, Ltd. Vehicle body vibration reduction control apparatus. 5,083,038, Cl. 290-40.00A.

Fukushima, Satoru; Takeda, Kenichi; Takeda, Atsushi; Uchikawa, Yoshio; and Hasegawa, Takashi, to Canon Kabushiki Kaisha. Image forming apparatus for supplying different amounts of electric charge to an end portion of a transfer material. 5,083,167, Cl. 355-274.000.

Funaki, Keisuke: *See*—
Yaguchi, Atsunori; and Funaki, Keisuke, 5,082,717, Cl. 428-207.000.

Fung, Fu-Ning, to Pfizer Inc. Low-calorie fat substitute. 5,082,684, Cl. 426-602.000.

Fung, Gilbert: *See*—
Ngo, That T.; and Fung, Gilbert, 5,082,929, Cl. 530-391.000.

Funke, Jimmy L.: *See*—
Nagy, Louis L.; Shum, Frank T. C.; and Funke, Jimmy L., 5,083,135, Cl. 343-713.000.

Furihata, Tetsuo: *See*—
Kanahara, Naoyuki; and Furihata, Tetsuo, 5,082,163, Cl. 228-124.000.

Furrer, Harald: *See*—
Wolf, Erhard; Gebert, Ulrich; Furrer, Harald; Tanaka, Toshizo; Sakurai, Masao; and Goto, Masayoshi, 5,082,845, Cl. 514-263.000.

Furukawa, Katsunori: *See*—
Yamaguchi, Hideki; Nitta, Masahiro; and Furukawa, Katsunori, 5,082,999, Cl. 219-10.55B.

Furumura, Yuji: *See*—
Yamada, Masao; Nakaishi, Masafumi; Nakagawa, Kenji; Furumura, Yuji; Eshita, Takashi; and Mieno, Fumitake, 5,082,695, Cl. 427-249.000.

Furuta, Hideya: *See*—
Taguchi, Kazushige; and Furuta, Hideya, 5,083,141, Cl. 346-108.000.

Futami, Tohru: *See*—
Sakata, Masao; Segoshi, Toru; Futami, Tohru; and Iijima, Yoichi, 5,083,065, Cl. 315-307.000.

Futamura, Kenichiro; Hong, Sumyong; and Mizuguchi, Sinichi, to Taiho Kogyo Co., Ltd. Boronized sliding material. 5,082,512, Cl. 148-330.000.

Fylak, Stefan. Blasting wheel apparatus and blades therefor. 5,081,801, Cl. 51-435.000.

G. D. Searle & Co.: *See*—
Mueller, Richard A.; Nakao, Akira; and Partis, Richard A., 5,082,854, Cl. 514-357.000.

G/DEC International, Ltd.: *See*—
Murdza, Andrew, 5,081,807, Cl. 52-204.000.

Gaetano, Ralph R., to Think, Inc. Compartmented article receiving device for holding photographic proofs and negatives. 5,082,168, Cl. 229-72.000.

Gage, Fred H.; Rosenberg, Michael B.; and Friedmann, Theodore, to University of California, The Regents of the. Method of grafting genetically modified cells to treat defects, disease or damage or the central nervous system. 5,082,670, Cl. 424-520.000.

Gaku, Morio; and Kimbara, Hidenori, to Mitsubishi Gas Chemical Co. Ltd. Method of drilling of through-holes in printed circuit board panels. 5,082,402, Cl. 408-1.00R.

Galatron S.r.l.: *See*—
Orlandi, Alessio, 5,082,241, Cl. 251-127.000.

Galbraith Engineering Pty. Ltd.: *See*—
Galbraith, Peter A., 5,081,963, Cl. 123-59.0AC.

Galbraith, Peter A., to Galbraith Engineering Pty. Ltd. Reciprocatory machines. 5,081,963, Cl. 123-59.0AC.

Gallup, Darrell L.; Featherstone, John L.; Reverente, Jessie P.; and Messer, Philip H., to Union Oil Company of California. Recovery of precious metals from aqueous media. 5,082,492, Cl. 75-712.000.

Gambuti, Stephen J.: *See*—
Rhoades, Clark J.; and Gambuti, Stephen J., 5,082,444, Cl. 433-80.000.

Ganter, Wolfgang; and Hodapp, Wolfram, to Junghans Uhren GmbH. Autonomous radio controlled timepiece. 5,083,123, Cl. 340-825.570.

Garcia, Felix; and Williams, Rodney D., to Texas Instruments Incorporated. Real time three dimensional display system for displaying images in three dimensions which are projected onto a screen in two dimensions. 5,082,350, Cl. 359-478.000.

Garcia, Georges; Malta, Alain D.; and Soubrie, Philippe, to Sanofi. Novel chroman derivatives active on the central nervous system, their method of preparation and pharmaceutical compositions in which they are present. 5,082,858, Cl. 514-456.000.

Garelick, Richard J. Swivel-slide seat. 5,082,328, Cl. 297-344.000.

Garioni, Alessandro: *See*—
Brusati, Ernesto; and Garioni, Alessandro, 5,081,773, Cl. 34-205.000.

Garner, Robert B.: *See*—
Joy, William; and Garner, Robert B., 5,083,263, Cl. 395-425.000.

Garst, Michael E.: *See*—
Lee, Gary C. M.; and Garst, Michael E., 5,082,954, Cl. 549-214.000.

Gartenmann, Niklaus: *See*—
Siegenthaler, Marcel; and Gartenmann, Niklaus, 5,081,744, Cl. 19-159.00A.
Gartside, Charles H., III; Panuska, Andrew J.; and Patel, Parbhubhai D., to AT&T Bell Laboratories. Optical fiber cable. 5,082,348, Cl. 385-111.000.
Gas Research Institute: *See*—
Leigh, Richard W., 5,082,160, Cl. 228-110.000.
Murray, Joseph G., 5,081,851, Cl. 62-475.000.
Gas Technology Resources Flotron, Incorporated: *See*—
Robinson, Andrew J.; Gerstung, Carl H.; and Tournaud, Alexis J., 5,082,372, Cl. 366-167.000.
Gaulke, David A.; O'Dell, Thomas M.; and Overmyer, Ricky L., to AT&T Bell Laboratories. Arrangement for determining switch port status at an adjunct processor. 5,083,308, Cl. 379-381.000.
Gay, Christian; and Lassiaz, Philippe, to Valeo. Assembly for coupling a locating member to a diaphragm, particularly for an automotive clutch. 5,082,098, Cl. 192-89.00B.
Gebald, Gregor: *See*—
Langen, Manfred; Gebald, Gregor; Inger, Siegfried; and Schroeders, Manfred, 5,082,192, Cl. 242-18.00R.
Gebert, Ulrich: *See*—
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Gebroeders Rook Beheer B.V.: *See*—
Rook, Cornelis; and Klein, Willem, 5,082,438, Cl. 425-358.000.
Gebruder Schmeing GmbH & Co.: *See*—
Dues, Theo, 5,081,737, Cl. 15-316.100.
GEC-Marconi Limited: *See*—
Walker, Robert G., 5,082,341, Cl. 385-14.000.
Geddes, Leslie A.: *See*—
Cook, William A.; Fearnot, Neal E.; and Geddes, Leslie A., 5,081,988, Cl. 128-419.0PG.
Gedeon, Harvey: *See*—
Ounanian, Hovic O.; Jose, Natividad R.; DiSomma, Joseph; and Gedeon, Harvey, 5,082,660, Cl. 424-63.000.
Geer, John H.: *See*—
Rubenstein, Gerald N.; and Geer, John H., 5,082,466, Cl. 8-142.000.
Gelsomini, Tito, to Texas Instruments Incorporated. Method of making a memory device by packaging two integrated circuit dies in one package. 5,082,802, Cl. 437-217.000.
Genentech, Inc.: *See*—
Palladino, Michael A., 5,082,658, Cl. 424-85.200.
General Electric CGR S.A.: *See*—
Tirelli, Marco; Romeas, Rene ; and Gregoire, Yves, 5,083,305, Cl. 378-37.000.
General Electric Company: *See*—
Brunelle, Daniel J., 5,082,968, Cl. 564-240.000.
Choi, Tak-Ming; Konrad, Adalbert; Kim, Bang M.; and Carroll, James J., Sr., 5,082,436, Cl. 425-174.80R.
Desorcie, James L.; and O'Brien, Michael J., 5,082,686, Cl. 427-54.100.
Eckberg, Richard P., 5,082,871, Cl. 522-29.000.
Fennern, Larry E., 5,082,620, Cl. 376-373.000.
Harshman, Daniel L., 5,081,831, Cl. 60-39.060.
Herd, Kenneth G.; Laskaris, Evangelos T.; and Vermilyea, Mark E., 5,083,105, Cl. 335-216.000.
Hokanson, Paul R., 5,083,055, Cl. 310-248.000.
Huang, Shyh-Chin, 5,082,506, Cl. 148-2.000.
Huang, Shyh-Chin, 5,082,624, Cl. 420-418.000.
Husain, Sifarat S.; Kroger, Gerard P.; and Czachor, Robert P., 5,082,424, Cl. 416-158.000.
Isnardi, Michael A.; and Smith, Terrence R., 5,083,196, Cl. 358-12.000.
Jeram, Edward M.; Ward, Brian J.; and Martin, Donald A., 5,082,886, Cl. 524-403.000.
Kast, Howard B., 5,082,245, Cl. 251-149.600.
Kutschenreuter, Paul H., Jr.; and Vishnauski, Jon M., 5,082,206, Cl. 244-53.00B.
Liu, Yung S., 5,082,755, Cl. 430-5.000.
Rumaner, Lee E.; Benz, Mark G.; and Knudsen, Bruce A., 5,082,164, Cl. 228-176.000.
Sawyer, Craig D., 5,082,619, Cl. 376-283.000.
Schneiter, John L., 5,082,362, Cl. 356-1.000.
Temple, Victor A. K., 5,082,795, Cl. 437-41.000.
Whitford, Robert P.; and Cofer, John I., IV, 5,083,040, Cl. 290-52.000.
General Hospital Corporation, The: *See*—
Heinrich, Gerhard, 5,082,774, Cl. 435-69.100.
General Instrument Corporation: *See*—
Gilberg, Robert C.; Moroney, Paul; and Shumate, William A., 5,083,293, Cl. 365-189.010.
General Motors Corporation: *See*—
Anderson, Russell C., Jr., 5,081,847, Cl. 62-222.000.
Nagy, Louis L.; Shum, Frank T. C.; and Funke, Jimmy L., 5,083,135, Cl. 343-713.000.
Stettner, Ernest R.; and Stoltman, Donald D., 5,082,184, Cl. 239-408.000.
Gensia Pharmaceuticals: *See*—
Gruber, Harry E.; Browne, Clinton E.; Vgarkar, Bheemaro G.; and Reich, Jack W., 5,082,829, Cl. 514-43.000.
George, Joseph D. Expansion joint seals and methods and apparatus for making and installing the same. 5,082,394, Cl. 404-68.000.
Gerl, Josef: *See*—
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Gerstung, Carl H.: *See*—
Robinson, Andrew J.; Gerstung, Carl H.; and Tournaud, Alexis J., 5,082,372, Cl. 366-167.000.
Gervais, Hubert. Air vent closure system. 5,081,913, Cl. 454-343.000.
Gesing, Adam J.; Luce, Edward S.; Raghavan, Narashima S.; and White, Danny R., to Lanxide Technology Company, LP. Production of metal carbide articles. 5,082,807, Cl. 501-93.000.
Ghiotte, Renzo: *See*—
Reil, Axel; Scherer, Rolf; Starke, Jorg; Ghiotte, Renzo; and Lovisetto, Primo, 5,082,425, Cl. 416-188.000.
Ghisellini, Renato: *See*—
Braga, Vittorio; and Ghisellini, Renato, 5,082,869, Cl. 521-134.000.
Gibson, Daniel G., III; and Hilly, Joan B., to Worcester Polytechnic Institute. Production of horseshoe crab amebocytes in vitro. 5,082,782, Cl. 435-240.200.
Gifford, James H., to Pirelli Armstrong Tire Corporation. Wide monofilament reinforcing cords employing high performance thermoplastics and tire belts made therefrom. 5,082,713, Cl. 428-107.000.
Gilberg, Robert C.; Moroney, Paul; and Shumate, William A., to General Instrument Corporation. Prevention of alteration of data stored in secure integrated circuit chip memory. 5,083,293, Cl. 365-189.010.
Gilsdorf, Michael J.: *See*—
Badyal, Rajeev; Mahjouri, Sam; Reid, Donald M.; and Gilsdorf, Michael J., 5,083,137, Cl. 346-1.100.
Gingold, Allen. Golf putter. 5,082,277, Cl. 273-164.000.
Gipe, Robert K.: *See*—
Ernst, Andreas B.; Yokelson, Howard B.; and Gipe, Robert K., 5,082,959, Cl. 556-438.000.
Gipson, Billy P.: *See*—
Thompson, Christopher M.; Campbell, Timothy J.; and Gipson, Billy P., 5,081,849, Cl. 62-262.000.
Giral, Salvador M.: *See*—
Baro, Josep M. R.; Giral, Salvador M.; and Pons de Vall, Josep M. F., 5,082,941, Cl. 544-358.000.
Glacier Metal Company Limited, The: *See*—
New, Nigel H., 5,083,053, Cl. 310-90.500.
Glackin, Richard T., to Adhesives Research, Inc. Method of making an electrically conductive pressure sensitive adhesive. 5,082,595, Cl. 252-511.000.
Glaser, Peter: *See*—
Koch, Peter; Kahnau, Guenter; Glaser, Peter; Habbel, Georg; Kunz, Stefan; and Schmatelka, Bernhard, 5,082,175, Cl. 237-12.30C.
Glaser, Robert A., to United States of America, Health and Human Services. Breath sampler. 5,081,871, Cl. 73-863.230.
Glass, Richard S.: *See*—
Saba, Don; Glass, Richard S.; and Yabusaki, Kenichi K., 5,082,934, Cl. 536-17.600.
Globe-Union Inc.: *See*—
Jones, Kenneth R., 5,082,754, Cl. 429-101.000.
Karolek, Neil C.; Inkmann, Mark S.; Johnson, Richard T.; Kondrakiewicz, Jerome A.; Lenhardt, Brett M.; and Saari, David W., 5,082,075, Cl. 180-68.200.
Glogowski, Mark E. Process for preparing organic compost from municipal refuse. 5,082,486, Cl. 71-9.000.
Gloyn, A. John: *See*—
Hsieh, C. Richard; and Gloyn, A. John, 5,082,990, Cl. 585-467.000.
Gmeiner, Paul: *See*—
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Gnann, Michael; and Rossberger, Erwin, to Peroxid-Chemie GmbH. Filter press electrolysis cell. 5,082,543, Cl. 204-255.000.
Goddard, Mervyn R.: *See*—
Carrell, Rebecca S.; van Dijk, Wietse; Goddard, Mervyn R.; and Hayes, John B., 5,082,674, Cl. 426-52.000.
Godfrey, John J.: *See*—
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Godleski, Stephen A.: *See*—
Monnier, John R.; Godleski, Stephen A.; Low, Howard M.; McCullough, Laughlin G.; McGarry, Lynda W.; and Phillips, Gerald W., 5,082,956, Cl. 549-507.000.
Goeckner, Victor D.; and Steffen, Ronald W., to Dickey-john Corporation. Transmission controller. 5,082,097, Cl. 192-32.000.
Goerens, Robert L., to Uniroyal Englebert Textilcord S.A. Flocked yarn. 5,082,711, Cl. 428-90.000.
Goforth, Billy D.: *See*—
Brooks, Joe G.; Goforth, Billy D.; and Goforth, Charles L., 5,082,605, Cl. 264-40.600.
Goforth, Charles L.: *See*—
Brooks, Joe G.; Goforth, Billy D.; and Goforth, Charles L., 5,082,605, Cl. 264-40.600.
Gohla, Werner: *See*—
Leupold, Ernst I.; Schonwalder, Karl-Heinz; Fritsche-Lang, Wolfram; Linkies, Adolf; Gohla, Werner; and Dany, Franz-Josef, 5,082,504, Cl. 134-42.000.
Gokel, George W.: *See*—
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Goldberger, Daniel S.: *See*—
Yelderman, Mark; Goldberger, Daniel S.; and Braig, James R., 5,081,998, Cl. 128-719.000.
Goldman, Don S.: *See*—
Burgess, Lloyd W., Jr.; and Goldman, Don S., 5,082,629, Cl. 422-82.110.

Goldstein, Joel M.; Patel, Vina; and Wiley, Steven J., to Aquarium Pharmaceuticals, Inc. Method for detoxifying ammonia and chloramine in aquatic environments. 5,082,573, Cl. 210-749.000.

Gomi, Katsushige: *See—*
Nakano, Hirofumi; Hara, Mitsunobu; Uosaki, Yohichi; Kawamoto, Isao; Takahashi, Keiiechi; and Gomi, Katsushige, 5,082,857, Cl. 514-453.000.

Gonzalez, Karl. Weight lifting apparatus. 5,082,259, Cl. 272-123.000.

Goodyear Tire & Rubber Company, The: *See—*
Hsu, Wen-Liang; and Halasa, Adel F., 5,082,906, Cl. 526-93.000.
Linster, Tom D., 5,082,901, Cl. 525-237.000.
Stanley, John H., 5,082,027, Cl. 138-113.000.

Gordon, Jeffrey I.: *See—*
Heuckeroth, Robert O.; Adams, Steven P.; Gordon, Jeffrey I.; and Gokel, George W., 5,082,967, Cl. 562-512.000.

Gorssman, Richard F.; and Tanno, David M., to Synthetic Products Company. Method of making capacitors containing stannic terephthalate. 5,083,235, Cl. 361-311.000.

Goruganthu, Rama R.: *See—*
Spletter, Philip J.; and Goruganthu, Rama R., 5,083,007, Cl. 219-121.640.

Goss, D. Leroy. Mailbox signal flag. 5,082,170, Cl. 232-35.000.

Gotanda, Kotaro: *See—*
Yasuda, Kikuo; Shibata, Kenyu; Minami, Nobuyoshi; Seki, Toshimi; Shiraiwa, Masafumi; Nakao, Tomio; Miyasaka, Katsuhiko; Ishimori, Tsutomu; Gotanda, Kotaro; and Sasaki, Takako, 5,082,844, Cl. 514-253.000.

Goto, Masayoshi: *See—*
Wolf, Erhard; Gebert, Ulrich; Furrer, Harald; Tanaka, Toshizo; Sakurai, Masao; and Goto, Masayoshi, 5,082,845, Cl. 514-263.000.

Gottesfeld, Shimshon: *See—*
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Gousetis, Charalampos: *See—*
Oftring, Alfred; Birnbach, Stefan; Baur, Richard; Gousetis, Charalampos; and Trieselt, Wolfgang, 5,082,599, Cl. 252-546.000.

Grace N.V.: *See—*
Bastiaens, Alfons; and Pauwels, Norbert, 5,082,726, Cl. 428-313.300.

Grage, Henry M., Jr., to Boehringer Mannheim GmbH. Wedge shaped test strip system useful in analyzing test samples, such as whole blood. 5,082,626, Cl. 422-56.000.

Graham, Timothy W.; and Scoins, John, to Welch Allyn, Inc. Electrode for metal halide discharge lamp. 5,083,059, Cl. 313-631.000.

Gramlich, Hermann: *See—*
Kohler, Werner; Reinhardt, Dieter; Gramlich, Hermann; Schertz, Reinhart; Weissmann, Karl; and Trampert, Rainer, 5,082,367, Cl. 356-73.000.

Grasse, Pamela J.: *See—*
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Grassi, John A.; and Stevens, Samuel B., to Caterpillar Inc. Paint fixture for supporting article during electrostatic spraying. 5,081,952, Cl. 118-500.000.

Grau, Werner: *See—*
Kreitner, Ludwig; Grau, Werner; Lehner, August; Reichert, Hans; Sommermann, Friedrich; Schneider, Norbert; and Erhardt, Gerd, 5,082,689, Cl. 427-128.000.

Graupe, Daniel; Arber, Amihadar; and Romeo, Silvano A., to Sigmedics, Inc. Microprocessor-controlled enhanced multiplexed functional electrical stimulator for surface stimulation in paralyzed patients. 5,081,989, Cl. 128-419.00R.

Gray, Roger L., to United States of America, Navy. Method of guiding an in-flight vehicle toward a target. 5,082,200, Cl. 244-3.150.

Grayson, John R.; and Pettinato, David, to RainSoft Water Conditioning Co. Control head for water purifier. 5,082,557, Cl. 210-109.000.

Great Lakes Chemical Corporation: *See—*
May, David E.; and Rose, Richard S., 5,082,867, Cl. 521-67.000.

Grecksch, Hans; Engelhardt, Dietmar; Ruth, Gregor; and Haasen, Rolf, to W. Schlafhorst AG & Co. Method and apparatus for evaluating the interruption of winding on a textile winding machine. 5,082,194, Cl. 242-35.60R.

Green, Kenneth E.: *See—*
Roy, Donald W.; Hastert, James L.; Green, Kenneth E.; Courbrough, Lawrence E.; and Trujillo, Aurielo, 5,082,739, Cl. 428-450.000.

Greenleaf, James F.: *See—*
Lu, Jian-yu; and Greenleaf, James F., 5,081,995, Cl. 128-662.030.

Gregoire, James, to Etablissements Gregoire S.A. Pneumatic press. 5,081,921, Cl. 100-37.000.

Gregoire, Yves: *See—*
Tirelli, Marco; Romeas, Rene ; and Gregoire, Yves, 5,083,305, Cl. 378-37.000.

Gregory, Steve D.: *See—*
Walles, Wilhelm E.; Achille, Felix; Fiero, Terry H.; Gregory, Steve D.; Kirch, Timothy O.; and Stevens, Bradley D., 5,082,740, Cl. 428-461.000.

Greifzug Hebezeugbau GmbH: *See—*
Harig, Manfred, 5,082,248, Cl. 254-333.000.

Greitzer, Steven; and Thomas, Paul, to Camden Industries, Inc. Doghouse with unique multi-channel flow-through fresh air ventilation. 5,081,956, Cl. 119-19.000.

Greter, Andreas, to Hoffman-La Roche Inc. Pipetting insert. 5,081,872, Cl. 73-864.740.

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Griffin, Richard C.: *See—*
Damiano, John; and Griffin, Richard C., 5,082,648, Cl. 423-598.000.

Grimm, Rolf: *See—*
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Grooms, John M.; and Jones, Mark A., to Burton Mechanical Contractors. Nonjamming vacuum valve having tapered plunger. 5,082,238, Cl. 251-61.500.

Gross, Hyman; Hatcher, Melvin J.; and Checkley, Jonathan R. P., to Interforce, Ltd. Method and apparatus for releasing value of an asset. 5,083,270, Cl. 364-408.000.

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Gross, Kenneth P.: *See—*
Pecen, Jiri; Gross, Kenneth P.; Leslie, Brian; and Kren, George, 5,083,035, Cl. 250-561.000.

Grosz, Clifford C.; and Schilling, Jeffrey, to Grosz, Clifford C. Bale carrying apparatus. 5,082,413, Cl. 414-24.500.

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Vannier, Michael W.; Groszewski, Paul G.; and Grasse, Pamela J., 5,082,001, Cl. 128-774.000.

Groth, Clarence R.: *See—*
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Grubb, Kenneth W. Portable hat caddy. 5,082,121, Cl. 211-33.000.

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Grube, Walter. Powered edger. 5,081,829, Cl. 56-256.000.

Gruber, Harry E.; Browne, Clinton E.; Vgarkar, Bheemaro G.; and Reich, Jack W., to Gensia Pharmaceuticals. AICA riboside prodrugs. 5,082,829, Cl. 514-43.000.

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Bruchez, Raymond J., Jr.; Mount, George E.; Dixon, James T.; Hagerman, Russell H.; Movick, Wayne K.; Arena, Aldo; and Stewart, Jim D., 5,082,182, Cl. 239-265.350.
Vasile, Carmine F., 5,083,050, Cl. 307-529.000.

GT Bicycles, Inc. a Calif. Corporation: *See—*
Duehring, William K.; and Yelverton, Forrest D., 5,082,303, Cl. 280-288.000.

GTE Laboratories Incorporated: *See—*
Holmstrom, Roger P.; Meland, Edmund; and Powazinik, William, 5,082,799, Cl. 437-129.000.

GTE Products Corporation: *See—*
Chau, Chung N.; and Smith, Jeffrey A., 5,082,640, Cl. 423-277.000.
Cheresnowsky, Michael J.; and Hoffman, Timothy J., 5,082,637, Cl. 423-55.000.
Dorazio, Raymond E., 5,082,480, Cl. 55-523.000.
Haraden, Thomas; Hough, Harold L.; and Moskowitz, Philip, 5,082,356, Cl. 359-886.000.

Gubelmann, Michel; and Allandrieu, Christian, to Rhone-Poulenc Chimie. Selective monomethylation of phenolic compounds. 5,082,978, Cl. 568-637.000.

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Rabindran, K. George; Filicicchia, David; and Guenther, Kenneth L., 5,083,281, Cl. 364-478.000.

Guest, John R. Warning device for a bicycle. 5,083,108, Cl. 340-432.000.

Guglielmo, Richard J., Sr. Process for treating netting with an antifouling composition and product produced thereby. 5,082,722, Cl. 428-255.000.

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Brigante, Mary-Jo F.; Guiles, Joseph W.; and Morabito, James, 5,082,255, Cl. 270-45.000.

Gundlach, Robert W.; and Bergen, Richard F., to Xerox Corporation. Non-arcing blade printer. 5,083,145, Cl. 346-159.000.

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Schroeder, Daniel R.; Lam, Kin S.; Hesler, Grace A.; Gustavson, Donald R.; Tomita, Koji; and Berry, Ronald L., 5,082,933, Cl. 536-16.800.

Guth, Jean-Luc: *See—*
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Guthrie, Roger T.; and Barkalow, Raymond W., to Atochem North America, Inc. Center section for coating hood for glass containers. 5,081,953, Cl. 118-715.000.
Gutierrez, Concetta M. Substandard size food wrap dispenser. 5,082,159, Cl. 225-34.000.
Gutman, George A.: *See—*
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Guttinger, Heinrich, to Aginfor AG fur Industrielle Forschung. Rotating spiral compressor with reinforced spiral ribs. 5,082,430, Cl. 418-55.200.
Guy, Alain: *See—*
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Guyonneau, Patrick, to Electronique Serge Dassault. Device for processing coins. 5,082,100, Cl. 194-343.000.
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H. W. Andersen Products, Inc.: *See—*
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Hachey, Raynald; Lamarre, Daniel; and Marcotte, Jacques, to Alcan International Limited. Method and apparatus for the measurement of the thermal conductivity of gases. 5,081,869, Cl. 73-25.030.
Hachtel, Hansjorg: *See—*
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Haci Ayvaz, A.S.: *See—*
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Hack, Michael; Thompson, Malcolm J.; and Tuan, Hsing C., to Xerox Corporation. Method of using offset gated gap-cell thin film device as a photosensor. 5,083,175, Cl. 357-30.000.
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Haferl, Peter E.; and Sauder, Thomas H., to RCA Thomson Licensing Corporation. Nonlinear RGB video signal processing. 5,083,198, Cl. 358-32.000.
Haff, Lyle E., Jr., to International Business Machines Corporation. Language bindings for graphics functions to enable one application program to be used in different processing environments. 5,083,262, Cl. 395-500.000.
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Hageland, Ingval: *See—*
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Hager, Alan C. Protective case for collectible baseballs. 5,082,110, Cl. 206-232.000.
Hagerman, Russell H.: *See—*
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Hagihara, Hitoshi: *See—*
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Hagiwara, Hiroshi: *See—*
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Hahnel, Walter. Lighting unit. 5,083,253, Cl. 362-306.000.
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Halff, Albert H.; and Reid, Allen F. Method and means for desalination of seawater and brackish water. 5,082,564, Cl. 210-638.000.
Hall, David M.: *See—*
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Hall, Mark R.: *See—*
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Halpern, Alan A.: *See—*
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Hamada, Akihiko; and Hiraoka, Hidenori, to Sumitomo Rubber Industries, Ltd. Solid golf ball. 5,082,285, Cl. 273-218.000.
Hamada, Jamel S.; and Marshall, Wayne E., to United States of America, Agriculture. Enzymatic deamidation of food proteins for improved food use. 5,082,672, Cl. 426-7.000.
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Hammons, James L.; and Lane, William H., to Telandco, Inc. Tool support assembly. 5,082,037, Cl. 144-286.00A.
Hanamoto, Hiroyuki; Higashio, Kimihiko; and Ito, Masazumi, to Minolta Camera Kabushiki Kaisha. Image duplicating apparatus including an editing function. 5,083,162, Cl. 355-218.000.
Hancharyk, John S.: *See—*
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Haney, Donald E. Sander with orbiting platen and abrasive. 5,081,794, Cl. 51-60.000.
Hang, Kenneth W.: *See—*
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Hara, Kouji; and Kurihara, Ryoichi, to Hitachi, Ltd. Semiconductor memory with alternately multiplexed row and column addressing. 5,083,296, Cl. 365-230.020.
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Hara, Yasuaki; and Ogawa, Masahiko, to Shin-Etsu Chemical Company, Ltd. Solventless silicone compositions for release paper. 5,082,915, Cl. 528-15.000.
Harada, Hidenari; and Fukaya, Kensaku, to Ben Company Ltd. Foldable reclining chair. 5,082,324, Cl. 297-83.000.
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Haraden, Thomas; Hough, Harold L.; and Moskowitz, Philip, to GTE Products Corporation. Temperature control apparatus for controlling metallic vapor pressure in a closed cell. 5,082,356, Cl. 359-886.000.
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Hardt, Jean, to Swiss Aluminium Ltd. Container for mixing and ejection of two components contained therewithin. 5,082,146, Cl. 222-135.000.
Hardt, Lee R.; and Means, James E., to United States of America, Navy. Thermomagnetic safe arm device. 5,083,041, Cl. 290-52.000.
Harig, Manfred, to Greifzug Hebezeugbau GmbH. Apparatus for pulling on a line. 5,082,248, Cl. 254-333.000.
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Harper, John D. Thermosetting bis(isoimide) resin compositions. 5,082,920, Cl. 528-205.000.

Harreus, Albrecht: *See—*
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Harrison, John R., to Ward Holding Company, Inc. Multiple ink roll system for flexographic printing stations. 5,081,928, Cl. 101-351.000.

Harshman, Daniel L., to General Electric Company. Scramjet combustor. 5,081,831, Cl. 60-39.060.

Hart, R., to National Oilwell (U.K.) Ltd. Releasable latch mechanism for attaching an actuator to a valve. 5,081,909, Cl. 92-14.000.

Hart, Robert: *See—*
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Hartman, Neil A., to Eaglebrook, Inc. Iron salts as retention agents. 5,082,528, Cl. 162-175.000.

Hartmann, Peter; and Bergmann, Bernhard, to Peter Hartmann Beteiligungen AG. Method for producing a composite pipe in a rotating drum. 5,082,614, Cl. 264-256.000.

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Hashimoto, Takao: *See—*
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Hashimoto, Yasuhiro; and Sakura, Kohei, to Sony Corporation. Image data inputting system for image processing apparatus. 5,083,215, Cl. 358-448.000.

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Hatch Associates Ltd.: *See—*
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Havlovitz, Paul M., to Republic Tool & Manufacturing Corp. Safety locking device for collapsible barricade for streets and highways. 5,082,249, Cl. 256-64.000.

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Hayashi, Yutaka; Sato, Masaaki; Muramatsu, Yuji; Yoshihara, Hirofumi; and Hasegawa, Teiji, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry; Sankosha Corporation; and Mitaka Denshi Kagaku Laboratory Inc. Surge absorption device. 5,083,185, Cl. 357-38.000.

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Hea Associates, Inc.: *See—*
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Healey, John N. C.; and Whiteman, Marshall, to Smith Kline & French Laboratories Limited. Pharmaceutical compositions. 5,082,651, Cl. 424-45.000.

Heard, James L.; Berwin, Ted W.; Andrews, Roland L.; and Scanlan, Larry A., to Hughes Aircraft Company. Signal processor for an imaging sensor system. 5,083,204, Cl. 358-113.000.

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Hedgcoth, Virgle L. Magnetic recording disk and sputtering process and apparatus for producing same. 5,082,747, Cl. 428-611.000.

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Heimer, Malcolm L.: *See—*
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Borner, Reinhard, 5,083,199, Cl. 358-88.000.

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Ernst, Klinger; and Heinrich, Isfort, 5,082,189, Cl. 241-158.000.

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Ruholl, Heinz, 5,081,800, Cl. 51-411.000.

Heitzler, Viktor; and Kapp, Richard, to Deutsche ITT Industries GmbH. Semiconductor package, method of manufacturing the same, apparatus for carrying out the method, and assembly facility. 5,083,193, Cl. 357-74.000.

Held, Jimmy L.; Tallerino, Charles E.; and Reich, Ronald S., to United States of America, Navy. Girth hitching mechanism. 5,082,318, Cl. 294-19.100.

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Soderquist, Charles E.; and Hellstrom, Steven P., 5,082,429, Cl. 417-477.000.

Helms, Sherron: *See—*
Rottman, Fritz; and Helms, Sherron, 5,082,779, Cl. 435-172.300.

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Hemsath, Klaus H., to Indugas, Inc. Gas fired radiant tube heater. 5,082,055, Cl. 166-272.000.

Hemstreet, George P.; Love, Tom J., Jr.; and Bergey, Karl H., to University of Oklahoma, Board of Regents of the. Biosample aspirator. 5,081,999, Cl. 128-750.000.

Henkel Corporation: *See—*
Farina, Samuel T.; and Korinek, Karl A., 5,082,511, Cl. 148-257.000.
Kain, William S.; and Staker, Donald D., 5,082,469, Cl. 44-280.000.

Hennes, Peter O.: *See—*
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Bell, Andrew, 5,082,909, Cl. 526-169.000.

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Herff, Robert: *See—*
Lindner, Helmut; Wenzel, Norbert; Herff, Robert; and Schmitz, Hans-Joachim, 5,082,379, Cl. 385-101.000.

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Kahlbaugh, Brad E.; Reinhart, Susan B.; Dudrey, Denis J.; and Herman, John T., 5,082,476, Cl. 55-97.000.

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Hessel, John F.; Cardinali, Martin S.; and Aronson, Michael P., to Lever Brothers Company, Division of Conopco, Inc. Enzymatic liquid detergent compositions containing nonionic copolymeric stabilizing agents for included lipolytic enzymes. 5,082,585, Cl. 252-174.120.

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Badyal, Rajeev; Mahjouri, Sam; Reid, Donald M.; and Gilsdorf, Michael J., 5,083,137, Cl. 346-1.100.
Muller, Emmerich; and Fleischer-Reumann, Michael, 5,082,378, Cl. 385-72.000.
Rau, Bantwal R.; and Towle, Ross A., 5,083,267, Cl. 395-375.000.

HF Scientific, Inc.: *See—*
Beers, Howard L., 5,083,036, Cl. 250-565.000.

Hickey, Thomas P.: *See—*
Barchas, Richard K.; and Hickey, Thomas P., 5,082,481, Cl. 62-23.000.

Hickman, Williams & Company: *See—*
Christensen, Henning J., 5,082,044, Cl. 164-4.100.

Higashi, Koji: *See—*
Okada, Toyokazu; Higashi, Koji; and Taguchi, Satoshi, 5,082,601, Cl. 252-585.000.

Higashio, Kimihiko: *See—*
Hanamoto, Hiroyuki; Higashio, Kimihiko; and Ito, Masazumi, 5,083,162, Cl. 355-218.000.

Higgins, David E., to Imperial Chemical Industries plc. Release film. 5,082,704, Cl. 428-40.000.

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Homel, Randall J.; and Swagel, Jeffrey R., 5,082,171, Cl. 232-43.200.

Higuchi, Seijun: *See—*
Izaki, Teruaki; Yoshida, Makoto; Osawa, Masami; Higuchi, Seijun; and Hisaaki, Sato, 5,082,536, Cl. 205-109.000.

Hilborn, David M.: *See—*
Dowd, James D.; Hilborn, David M.; Weilant, Roy; and Lawassani, Abdolhossein R., 5,082,323, Cl. 296-214.000.

Hill, Daryl G.; Robert, Roderick C.; and Sutphen, Robert R. Fluid injection spray system. 5,082,177, Cl. 239-77.000.

Hill, James D., to Tandem Scanning Corporation. Scanning disks for use in tandem scanning reflected light microscopes and other optical systems. 5,083,220, Cl. 359-234.000.

Hill, Lawrence A.; Jacobs, Michael E.; Kroll, Arthur S.; and Williams, Ralph E., to Eastman Kodak Company. Disposable development station using two component developer and method of making same. 5,083,166, Cl. 355-260.000.

Hillmann, Reinhart, to SKF GmbH. Composite cage. 5,082,375, Cl. 384-526.000.

Hilly, Joan B.: *See—*
Gibson, Daniel G., III; and Hilly, Joan B., 5,082,782, Cl. 435-240.200.

Hilmont Incorporated: *See—*
Albizzati, Enrico; and Resconi, Luigi, 5,082,817, Cl. 502-102.000.

Hilti Aktiengesellschaft: *See—*
Obermeier, Josef; Spangenberg, Rolf; and Linke, Theodor, 5,082,070, Cl. 175-403.000.

Hinkle, Tobin. Star projection device. 5,082,447, Cl. 434-286.000.

Hino, Rika; and Osawa, Kimio, to Kabushiki Kaisha Toshiba. Image forming apparatus receiving external data to perform a predetermined process. 5,083,286, Cl. 395-115.000.

Hinton, John H.: *See—*
Nowak, William J.; and Hinton, John H., 5,083,138, Cl. 346-1.100.

Hinton, Robert A. Self-maintenance planter. 5,081,790, Cl. 47-81.000.

Hioki, Toshimichi: *See—*
Sekido, Hiroshi; Sakuma, Tadashi; and Hioki, Toshimichi, 5,082,326, Cl. 297-284.00R.

Hiraoka, Hidenori: *See—*
Hamada, Akihiko; and Hiraoka, Hidenori, 5,082,285, Cl. 273-218.000.

Hirata, Kohichi: *See—*
Koseki, Tadao; Koseki, Akihiko; Hirata, Kohichi; and Itoh, Haruhiko, 5,082,484, Cl. 65-144.000.

Hirata, Mayumi: *See—*
Taniguchi, Masao; Umezu, Kohei; Shirasaka, Tadashi; Inoue, Shinya; Shinpuku, Tetsuro; Mitsuka, Masayuki; and Hirata, Mayumi, 5,082,856, Cl. 514-423.000.

Hirayama, Takanobu; Kinoshita, Naohisa; Kashima, Hiroyuki; Hasegawa, Makoto; Tsuzuki, Toshihiro; and Muto, Kiyoshi, to Brother Kogyo Kabushiki Kaisha. Paper ejecting device having sheet reversing and non-reversing positions. 5,082,269, Cl. 271-65.000.

Hironaka, Bungo; and Yoshioka, Fumitaka, to Okitsumo Incorporated. Paper adhesive applicator with adhesive having pH indicator. 5,082,386, Cl. 401-206.000.

Hirosawa, Masaru: *See—*
Wakatsuki, Yuji; Kondo, Shigekazu; Takaoka, Mitsuyuki; Hirosawa, Masaru; and Suzuki, Nobuya, 5,081,850, Cl. 62-405.000.

Hiroshi Takeuchi: *See—*
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Hisaaki, Sato: *See—*
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Hishikawa, Toshiharu, to Araya Industrial Co., Ltd. Method and an apparatus for inserting a spoke into a spoke hole of a flange of a hub. 5,081,755, Cl. 29-894.330.

Hitachi Construction Machinery Co., Ltd.: *See—*
Yagyu, Takashi; Tanaka, Soutarou; and Katsuki, Kimio, 5,081,905, Cl. 91-461.000.

Hitachi Haramachi Semiconductor: *See—*
Miura, Masato; Shimura, Tatsuo; Kariya, Tadaaki; Kawauchi, Norihiro; and Kurita, Sinichi, 5,083,180, Cl. 357-43.000.

Hitachi, Ltd.: *See—*
Fujiwara, Mitsuru; Suzuki, Akira; and Okita, Junji, 5,082,427, Cl. 417-292.000.
Hara, Kouji; and Kurihara, Ryoichi, 5,083,296, Cl. 365-230.020.
Imai, Kyoko; Nomura, Yasushi; and Umetsu, Hiroshi, 5,083,283, Cl. 364-497.000.
Ishibashi, Yoji; Ohmori, Takashi; Kato, Fumio; Kuroda, Michio; and Iizuka, Nobuyuki, 5,081,843, Cl. 60-733.000.
Kikuhara, Takashi; Shitamura, Osamu; and Kondo, Yasuo, 5,081,760, Cl. 29-130.000.
Miura, Masato; Shimura, Tatsuo; Kariya, Tadaaki; Kawauchi, Norihiro; and Kurita, Sinichi, 5,083,180, Cl. 357-43.000.
Shiiki, Kazuo; Shiroishi, Yoshihiro; Ohta, Norio; Tsuyoshi, Toshiaki; Takano, Hisashi; and Kugiya, Fumio, 5,083,226, Cl. 360-77.050.
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Tomite, Tosio; Nakatsugawa, Keiichi; and Abukawa, Toshimi, 5,083,054, Cl. 310-154.000.
Uetake, Naohito; Sekine, Ietsugu; Hasimoto, Haruo; Fukasawa, Tetsuo; and Iba, Hajime, 5,082,602, Cl. 252-627.000.
Yoshida, Nobuo; and Koide, Kazuo, 5,083,181, Cl. 357-45.000.

Hitachi Maxell, Ltd.: *See—*
Miyake, Akira; Akai, Norio; and Taniguchi, Tomizo, 5,082,728, Cl. 428-329.000.

Hitachi Metals, Ltd.: *See—*
Matsuo, Hideshige; Yamamoto, Isamu; Itoh, Michio; Sato, Kuniaki; Nakamura, Yoshihiro; Tomita, Akia; and Mihara, Yoshiki, 5,082,166, Cl. 228-189.000.

Hiyoshi, Teruo; Suzuki, Hideo; Aoki, Eiichiro; Nakada, Akira; Kumano, Shinji; Watanabe, Kunihiko; and Sakama, Masao, to Yamaha Corporation. Musical tone generating apparatus. 5,081,896, Cl. 84-600.000.

Hoback, Gregory L.; and Meyers, James L., to Haynes International, Inc. Shielding gas mixture for welding superalloys. 5,083,002, Cl. 219-74.000.

Hochin, Andre : *See—*
Boinot, Francois; Cousin, Michel; Hochin, Andre ; and Meyer, Nicolas, 5,082,918, Cl. 528-140.000.

Hodapp, Wolfram: *See—*
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Hodate, Masato: *See—*
Shiozawa, Shinji; and Hodate, Masato, 5,082,041, Cl. 152-381.300.

Hodge, Ron. Fiber optic conduit-connector assembly. 5,082,338, Cl. 385-81.000.

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Haubs, Michael; Drotloff, Hansotto; and Wildhardt, Juergen, 5,082,565, Cl. 210-650.000.
Leupold, Ernst I.; Schonwalder, Karl-Heinz; Fritsche-Lang, Wolfram; Linkies, Adolf; Gohla, Werner; and Dany, Franz-Josef, 5,082,504, Cl. 134-42.000.
Siegel, Herbert; and Scheler, Siegfried, 5,082,932, Cl. 534-557.000.
Sohn, Erich; Handte, Reinhard; Mildenberger, Hilmar; Burstell, Helmut; Bauer, Klaus; and Bieringer, Hermann, 5,082,949, Cl. 548-378.000.
Stroszynski, Joachim; Boergerding, Heinz; and Lehmann, Peter, 5,082,537, Cl. 205-139.000.

Hoechst Celanese Corporation: *See—*
Cooke, Anthony W.; and Bader, Monika E., 5,082,731, Cl. 428-362.000.
Phillips, Thomas S.; and Corso, Anthony J., 5,082,963, Cl. 558-33.000.
Swofford, Howard W., 5,082,738, Cl. 428-437.000.

Hoechst Japan Limited: *See—*
Wolf, Erhard; Gebert, Ulrich; Furrer, Harald; Tanaka, Toshizo; Sakurai, Masao; and Goto, Masayoshi, 5,082,845, Cl. 514-263.000.

Hoeft, Jon L.: *See—*
Dugan, Michael D.; and Hoeft, Jon L., 5,083,211, Cl. 358-310.000.

Hoelsman, James W.; Hegland, Joel E.; Braunlich, Peter F.; and Tetzlaff, Wolfgang, to International Sensor Technology, Inc. Radiation dosimeters. 5,083,031, Cl. 250-484.100.

Hofer, Urs: *See—*
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Hoffend, Thomas R.; Bruzee, Michelle M.; and Eddy, Clifford O., to Xerox Corporation. Toner and developer compositions with charge enhancing additives. 5,082,758, Cl. 430-110.000.

Hoffman, Eldon P., to Tektronix, Inc. Rotational adjustment of an ink jet head. 5,083,143, Cl. 346-139.00R.

Hoffman-La Roche Inc.: *See—*
Greter, Andreas, 5,081,872, Cl. 73-864.740.

Hoffman, Ronald W. Container stand. 5,082,218, Cl. 248-96.000.

Hoffman, Timothy J.: *See—*
Cheresnowsky, Michael J.; and Hoffman, Timothy J., 5,082,637, Cl. 423-55.000.

Hoffmann-La Roche Inc.: *See—*
Buchecker, Richard; Fromm, Hans-Jurgen; Kelly, Stephen; and Schadt, Martin, 5,082,589, Cl. 252-299.630.
Manning, Ronald F.; and Kahn, Maria S., 5,082,785, Cl. 435-252.320.
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Hofmann, Gottfried, to Von Roll Transportsysteme AG. Aerial tramway installation. 5,081,932, Cl. 104-112.000.

Hofmeister, Peter: *See—*
Kardorff, Uwe; Neubauer, Hans-Juergen; Leyendecker, Joachim; Kuenast, Christoph; Hofmeister, Peter; and Krieg, Wolfgang, 5,082,852, Cl. 514-351.000.

Hoigaard, Jan C. Apparatus for monitoring and controlling electrostatic discharge. 5,083,117, Cl. 340-649.000.

Hokanson, Paul R., to General Electric Company. Notched carbon brush for rotating electric machines. 5,083,055, Cl. 310-248.000.

Holden, Wesley G. Boat assembly. 5,081,947, Cl. 114-345.000.

Holder, Tommie, to Cooper, Inc. Apparatus for removing floor covering. 5,082,330, Cl. 299-37.000.

Holemans, Peter: *See—*
Smith, W. Novis, Jr.; and Holemans, Peter, 5,082,721, Cl. 428-252.000.

Holka, Thomas C., to Ford Motor Company. Offset steering gear assembly. 5,082,077, Cl. 180-79.300.

Holl, Roland; Rebel, Herbert; and Hummel, Peter, to MAN Roland Druckmaschinen AG. Selective drive for a damping unit metering roller in an offset printing press. 5,081,925, Cl. 101-148.000.

Holler, Thomas D., to Ametek, Inc. Method for removing low concentrations of metal contaminants from water. 5,082,568, Cl. 210-679.000.

Hollingworth, Jack, Jr. Mini boat/camping trailer. 5,082,307, Cl. 280-699.000.

Holly, Sandor: *See—*
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Holmstrom, Roger P.; Meland, Edmund; and Powazinik, William, to GTE Laboratories Incorporated. Method for fabricating indium phosphide/indium gallium arsenide phosphide buried heterostructure semiconductor lasers. 5,082,799, Cl. 437-129.000.

Holmwood, Graham: *See—*
Brandes, Wilhelm; Hanssler, Gerd; Reinecke, Paul; Scheinpflug, Hans; and Holmwood, Graham, 5,082,855, Cl. 514-383.000.

Holtermann, Dennis L., to Chevron Corporation. Isomerization catalyst and process for its use. 5,082,988, Cl. 585-739.000.

Holzner, Charles R., Sr.: *See—*
Steiner, Robert L.; Holzner, Charles R., Sr.; and Voth, Allen J., 5,082,150, Cl. 222-189.000.

Homeier, Edwin H.; Hennes, Peter O.; and Tota, Padma V., to UOP. Removal of metals from liquefied hydrocarbons. 5,082,569, Cl. 210-679.000.

Homel, Randall J.; and Swagel, Jeffrey R., to Highsmith Company, Inc. Book return with collapsible bag receptacle. 5,082,171, Cl. 232-43.200.

Homeyer, Bernhard: *See—*
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Homma, Yoshiyasu, to Brother Kogyo Kabushiki Kaisha. Developer depositing unit for an image forming apparatus. 5,083,151, Cl. 355-27.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Inoue, Kazuo; Ajiki, Yoshio; and Sono, Hiroshi, 5,081,971, Cl. 123-308.000.
Kikuchi, Tokio; Shiina, Hiroshi; Takakura, Keiji; and Ichihashi, Satoru, 5,081,873, Cl. 73-865.900.
Miyamoto, Yasuo, 5,082,252, Cl. 267-140.10A.
Sato, Makoto; and Inagaki, Hiromi, 5,083,075, Cl. 318-640.000.
Takano, Kohzoh; Oyobiki, Yoshinori; Watabe, Yoshiharu; and Kondo, Yasuo, 5,081,889, Cl. 82-122.000.

Honeywell, Inc.: *See—*
Burdoin, Robert B., 5,083,279, Cl. 364-435.000.
Fletcher, Thomas A., 5,082,370, Cl. 356-328.000.

Hong, Sumyong: *See—*
Futamura, Kenichiro; Hong, Sumyong; and Mizuguchi, Sinichi, 5,082,512, Cl. 148-330.000.

Hoogendoorn, Abraham; and Lokhoff, Gerardus, to U.S. Philips Corporation. Apparatus for recording an audio signal with protection against re-recording thereof, and recording apparatus which indicates the presence of such protection. 5,083,224, Cl. 360-60.000.

Hooper, Richard G., to NaTec Resources, Inc. SO_xNO_x pollution control composition. 5,082,586, Cl. 252-184.000.

Hopkins, Gregory J., to Dexter Chemical Corporation. Method for pigmenting fabrics of garments in tumbling machine to create a nonuniform surface finish effect and composition useful in same. 5,082,468, Cl. 8-477.000.

Hopkinson, Derek: *See—*
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Hoppe, Wolfgang: *See—*
Fuchs, Manfred H.; Hoppe, Wolfgang; Beckmann, Friedrich-Karl; Brinkmeyer, Ernst; and Brennecke, Wolfgang, 5,082,368, Cl. 356-73.100.

Hopper, David R.: *See—*
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Horie, Atsushi; and Usami, Kimiyoshi, to Kabushiki Kaisha Toshiba. Precharged-type logic circuit having dummy precharge line. 5,083,047, Cl. 307-465.000.

Horie, Misato; Fukumoto, Masahiro; and Yoneya, Masayuki, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Method of treatment of high-level radioactive waste. 5,082,603, Cl. 252-628.000.

Horita, Yoshiyuki: *See—*
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Horiuti, Masao; Kodama, Shunichi; and Kuroda, Kenji, to Anritsu Corporation. Ultra-black film and method of manufacturing the same. 5,083,222, Cl. 359-350.000.

Horn, Edward R.; Hopkinson, Derek; and Allen, Michael C., to Aladdin Engineering & Mfg., Inc. Locking valve and flow control valve assembly. 5,081,904, Cl. 91-420.000.

Horvat, David T.: *See—*
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Hoshiko, Tomonori: *See—*
Oinuma, Hitoshi; Yamanaka, Motosuke; Miyake, Kazutoshi; Hoshiko, Tomonori; Minami, Norio; Shoji, Tadao; Daiku, Yoshiharu; Sawada, Kohei; and Nomoto, Kenichi, 5,082,850, Cl. 514-317.000.

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Hoshino, Minoru: *See—*
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Hoshizaki Denki Kabushiki Kaisha: *See—*
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Hosoi, Atsushi: *See—*
Kusaka, Kensaku; Suzuki, Yoshihiko; Kimura, Shigeo; Hosoi, Atsushi; Adachi, Hiroyuki; and Kinoshita, Masahide, 5,083,168, Cl. 355-285.000.

Hosoi, Takashi, to Kabushiki Kaisha Toshiba. Lunch box type electronic apparatus. 5,083,290, Cl. 364-708.000.

Hosomi, Hidezo: *See—*
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Hosoya, Yoshihiro: *See—*
Nishimoto, Akihiko; Hosoya, Yoshihiro; and Urabe, Toskhiaki, 5,082,510, Cl. 148-111.000.

Hou, Jack; and Feng, I-Pin, to Hou, Jack. Reciprocating ornamental display assembly. 5,081,899, Cl. 84-95.200.

Hough, Harold L.: *See*—
Haraden, Thomas; Hough, Harold L.; and Moskowitz, Philip, 5,082,356, Cl. 359-886.000.
Houghtaling, Dawn M.: *See*—
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Houghton, Jim: *See*—
Marchese, Tony; Houghton, Jim; Launspach, Dick; and Marchese, Domenic, 5,082,392, Cl. 404-25.000.
Houghton, Richard A.: *See*—
Slawinski, Christopher; Houghton, Richard A.; and Brantingham, George L., 5,083,113, Cl. 340-572.000.
Houlihan, William J., to Sandoz Ltd. Use of the R-(+)-isomer of 2-methoxy-3-octadecyloxy-propanol-(1)-phosphoric acid, monocholine ester in treating multiple sclerosis. 5,082,846, Cl. 514-277.000.
Housei Ttekou Co., Ltd.: *See*—
Sasaki, Kensuke, 5,081,811, Cl. 52-227.000.
Howell, William B. Method for producing fiber reinforced polymer beams, including leaf springs. 5,082,514, Cl. 156-175.000.
Howson, Mark R., to BP Chemicals Limites. Removal of sulfides using chlorite and an amphoteric ammonium betaine. 5,082,576, Cl. 507-130.000.
Hsieh, C. Richard; and Gloyn, A. John, to Chevron Research and Technology Company. Alkylation of aromatics-containing refinery streams. 5,082,990, Cl. 585-467.000.
Hsien, James C. Golf club head with variable center of gravity. 5,082,278, Cl. 273-164.000.
Hsu, C. C. Frank. Supporting device. 5,082,222, Cl. 248-170.000.
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Hsu, Wen-Liang; and Halasa, Adel F., to Goodyear Tire & Rubber Company, The. Catalyst for the synthesis of crystalline 3,4-polyisoprene. 5,082,906, Cl. 526-93.000.
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Huang, Tracy J.: *See*—
Brown, deceased Lawrence M.; and Huang, Tracy J., 5,082,984, Cl. 585-481.000.
Hubbard, David W.: *See*—
Dolan, Donald T.; Durst, Robert T., Jr.; Hubbard, David W.; and Silverberg, Morton, 5,082,072, Cl. 177-25.150.
Hubbell, Jackie. Shopping cart placement structure with stairway. 5,082,087, Cl. 182-129.000.
Hubble, Fred F., III: *See*—
Borton, Michael D.; Hubble, Fred F., III; Martin, James P.; Mattioli, Theresa K.; and Shoemaker, Ralph A., 5,083,161, Cl. 355-208.000.
Hubert, Gustav: *See*—
Frank, Jack D.; and Hubert, Gustav, 5,083,034, Cl. 250-494.100.
Huebner, Mark fA., to Wickes Manufacturing Company. Window regulator with orthogonal pushout for flush window. 5,081,792, Cl. 49-221.000.
Hughes Aircraft Company: *See*—
Ali, Mir A.; Robbins, Ronald E.; and Wakugawa, Jason M., 5,082,805, Cl. 501-91.000.
Alidio, Raul; and Allison, Robert, 5,083,098, Cl. 331-99.000.
Chern, Mao-Jin; and Wreede, John E., 5,082,337, Cl. 359-15.000.
Frank, Jack D.; and Hubert, Gustav, 5,083,034, Cl. 250-494.100.
Heard, James L.; Berwin, Ted W.; Andrews, Roland L.; and Scanlan, Larry A., 5,083,204, Cl. 358-113.000.
Julian, Michael D., 5,083,131, Cl. 342-372.000.
Oaks, Richard W., 5,082,199, Cl. 244-3.120.
Wyles, Richard H.; and Madajian, David, 5,083,016, Cl. 250-208.100.
Hughes, Ivor M.: *See*—
Verny, Tom, 5,082,665, Cl. 424-464.000.
Hughes, Stephen G.: *See*—
Overbeeke, Nicolaas; Fellinger, Arthur J.; and Hughes, Stephen G., 5,082,778, Cl. 435-172.300.
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Lehenbauer, Ruth B.; and Hugie, Lois, 5,081,716, Cl. 2-78.00B.
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Hull, Harold L.; and Waite, Dennis J. Liquid filled golf club. 5,082,279, Cl. 273-170.000.
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Nachtman, Thomas; Hull, John; and O'Shea, Patrick, 5,082,500, Cl. 106-900.000.
Hummel, Peter: *See*—
Holl, Roland; Rebel, Herbert; and Hummel, Peter, 5,081,925, Cl. 101-148.000.
Hung, Liang-sun: *See*—
Agostinelli, John A.; Hung, Liang-sun; and Mir, Jose M., 5,082,688, Cl. 427-126.300.
Hunnell, Jack E.; Hunnell, John E.; and Jackson, Thomas F., to Triangle Biomedical Sciences, Inc. Microtome object holder assembly. 5,082,254, Cl. 269-269.000.
Hunnell, John E.: *See*—
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Apelian, Henry M.; Coffin-Beach, David; and Huq, Abu S., 5,082,863, Cl. 514-618.000.
Hurliman, Russell J.; Becicka, Kenneth F.; and Chamberlain, Neal C., to FMC Corporation. Layer clamp hand with floating side clamps and carton flap hold-down platen. 5,082,319, Cl. 294-119.100.
Husain, Sifarat S.; Kroger, Gerard P.; and Czachor, Robert P., to General Electric Company. Connection system for aircraft propeller blades. 5,082,424, Cl. 416-158.000.
Hutcheson, Steven R. Meal container. 5,082,115, Cl. 206-545.000.
Hutchison, V. James. Display bracket with living hinge. 5,082,215, Cl. 248-220.400.
Hvolka, Dusan J, to DJH Engineering Center, Inc. Multi-purpose service vehicle. 5,082,082, Cl. 180-234.000.
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Morrison, Stanley R.; Hykaway, Norma J.; Sears, William M.; and Frindt, Robert F., 5,082,789, Cl. 436-132.000.
I.M.A. Industria Macchine Automatiche S.p.A.: *See*—
Cardinali, Paolo, 5,081,816, Cl. 53-54.000.
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Farina, Carlo; Pinza, Mario; Cerri, Alberto; and Parravicini, Francesco, 5,082,939, Cl. 544-239.000.
Iatron Laboratories, Inc.: *See*—
Miki, Iyoko; Tsubota, Hiroyuki; Tsuchiko, Toshio; and Ochi, Hisashi, 5,082,769, Cl. 435-19.000.
Iba, Hajime: *See*—
Uetake, Naohito; Sekine, Ietsugu; Hasimoto, Haruo; Fukasawa, Tetsuo; and Iba, Hajime, 5,082,602, Cl. 252-627.000.
Ichihara, Yoshiro, to Canon Kabushiki Kaisha. Flash device. 5,083,062, Cl. 315-241.00P.
Ichihashi, Satoru: *See*—
Kikuchi, Tokio; Shiina, Hiroshi; Takakura, Keiji; and Ichihashi, Satoru, 5,081,873, Cl. 73-865.900.
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Toyoda, Shuhei; Matsuzawa, Soichiro; and Ichinose, Masahiro, 5,083,221, Cl. 359-245.000.
Icuss, James C.: *See*—
Schwanke, Robert E.; and Icuss, James C., 5,083,299, Cl. 368-113.000.
Ide, Takanobu, to Nissan Motor Company, Ltd. Fluid filled elastomeric damping device. 5,081,881, Cl. 74-573.00F.
Idemitsu Kosan Company Limited: *See*—
Saji, Tetsuo; and Hoshino, Katsuyoshi, 5,082,539, Cl. 205-162.000.
Idemitsu Petrochemical Company, Ltd.: *See*—
Miura, Yoshiaki; Mihara, Masami; and Hosomi, Hidezo, 5,082,892, Cl. 524-516.000.
Yaguchi, Atsunori; and Funaki, Keisuke, 5,082,717, Cl. 428-207.000.
IEG Industrie-Engineering GmbH: *See*—
Bernhardt, Bruno, 5,082,053, Cl. 166-115.000.
Ife, Robert J.; Brown, Thomas H.; and Leach, Colin A., to Smith Kline & French Laboratories, Ltd. Substituted 4-aminoquinoline derivatives as gastric acid secretion inhibitors. 5,082,848, Cl. 514-313.000.
Ife, Robert J.: *See*—
Brown, Thomas H.; Ife, Robert J.; and Leach, Colin A., 5,082,841, Cl. 514-235.200.
Igarashi, Misao: *See*—
Ishida, Takashi; Ueda, Yoshikazu; Kubota, Teruji; Igarashi, Misao; Tanaka, Norichika; and Kamijo, Yasuhiko, 5,081,937, Cl. 110-246.000.
Igarashi, Tsutomu, to Olympus Optical Co., Ltd. Objective lens system for endoscopes. 5,083,223, Cl. 359-708.000.
Iida, Saburo: *See*—
Utunomiya, Jiro; Iida, Saburo; Sibuya, Hitosi; Kusaba, Kazunori; and Narumi, Isao, 5,081,764, Cl. 29-843.000.
Iijima, Yoichi: *See*—
Sakata, Masao; Segoshi, Toru; Futami, Tohru; and Iijima, Yoichi, 5,083,065, Cl. 315-307.000.
Iijima, Zenshiro, to Adger Kogyo Co., Ltd. Ink composition. 5,082,495, Cl. 106-21.000.
Iizuka, Nobuyuki: *See*—
Ishibashi, Yoji; Ohmori, Takashi; Kato, Fumio; Kuroda, Michio; and Iizuka, Nobuyuki, 5,081,843, Cl. 60-733.000.
Iizuka, Shougo: *See*—
Suzuki, Yoshitsugu; Iizuka, Shougo; Kajiyama, Shigeo; Suzuki, Sanae; and Kudo, Shigeji, 5,082,253, Cl. 269-45.000.
Iizuka, Yasuhiro: *See*—
Tsuzuki, Yasushi; Tanaka, Toshio; and Iizuka, Yasuhiro, 5,082,594, Cl. 252-502.000.
Ikeda, Masakazu: *See*—
Taira, Hatsuo; Ikeda, Masakazu; Harada, Yoshio; and Hagiwara, Hiroshi, 5,082,741, Cl. 428-469.000.

Ikegami Tsushinki Co., Ltd.: *See—*
Suzuki, Akihiro; Yamamoto, Hiroshi; and Tobita, Hiroshi, 5,082,257, Cl. 271-293.000.

Ikutame, Teruaki: *See—*
Suzuki, Hironori; and Ikutame, Teruaki, 5,083,074, Cl. 318-625.000.

Illinois Tool Works Inc.: *See—*
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Imai, Akio; Sugimori, Kiyoyuki; Yamamoto, Keisaku; and Takane, Minoru, to Sumitomo Chemical Co., Ltd. Ethylene-α-olefin copolymer and process for producing the same. 5,082,908, Cl. 526-143.000.

Imai, Hiroshi: *See—*
Kasai, Junichi; Imai, Hiroshi; and Nanbu, Tatuyoshi, 5,083,311, Cl. 381-63.000.

Imai, Kyoko; Nomura, Yasushi; and Umetsu, Hiroshi, to Hitachi, Ltd. Method of determining calibration curve and apparatus using calibration curve. 5,083,283, Cl. 364-497.000.

Imai, Shoji: *See—*
Chikamori, Takeshi; Ohkubo, Masaki; Kamisakamoto, Akira; Imai, Shoji; Tsubota, Shunichi; Uemura, Hideyuki; and Wakutani, Shinichi, 5,081,974, Cl. 123-478.000.

Imamura, Hiroyuki, to Jatco Corporation. Lock-up clutch pressure control device. 5,082,095, Cl. 192-3.300.

Imhoff, Glenn T.: *See—*
Stone, Irving I.; and Imhoff, Glenn T., 5,081,776, Cl. 40-124.100.

Imperial Chemical Industries plc: *See—*
Higgins, David E., 5,082,704, Cl. 428-40.000.
Moffatt, Frank S., 5,082,966, Cl. 560-11.000.
Rhoades, Gary V.; and Francis, John, 5,082,824, Cl. 503-227.000.

In, Cho N. Massaging and combing helmet for insomnia. 5,081,986, Cl. 128-62.00R.

Inagaki, Hiromi: *See—*
Sato, Makoto; and Inagaki, Hiromi, 5,083,075, Cl. 318-640.000.

Inagaki, Michihiro: *See—*
Saito, Hiroshi; and Inagaki, Michihiro, 5,082,725, Cl. 428-304.400.

Indugas, Inc.: *See—*
Hemsath, Klaus H., 5,082,055, Cl. 166-272.000.

Inger, Siegfried: *See—*
Langen, Manfred; Gebald, Gregor; Inger, Siegfried; and Schroeders, Manfred, 5,082,192, Cl. 242-18.00R.

Inglett, George E., to United States of America, Agriculture. Method of making soluble dietary fiber compositions from cereals. 5,082,673, Cl. 426-21.000.

Inkmann, Mark S.: *See—*
Karolek, Neil C.; Inkmann, Mark S.; Johnson, Richard T.; Kondrakiewicz, Jerome A.; Lenhardt, Brett M.; and Saari, David W., 5,082,075, Cl. 180-68.200.

Inotech AG: *See—*
Kuhn, Othmar, 5,083,027, Cl. 250-374.000.

Inoue, Akira: *See—*
Mitsui, Kiichiro; Ishii, Tooru; Sano, Kuinio; and Inoue, Akira, 5,082,820, Cl. 502-350.000.

Inoue, Hideo: *See—*
Fukushima, Akira; Makino, Nobuhiko; Uchida, Kiyoyuki; Inoue, Hideo; and Sakai, Kazunori, 5,082,333, Cl. 303-96.000.

Inoue, Kazuo; Ajiki, Yoshio; and Sono, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Intake system for internal combustion engine. 5,081,971, Cl. 123-308.000.

Inoue, Koji: *See—*
Akao, Mutsuo; and Inoue, Koji, 5,082,744, Cl. 428-522.000.

Inoue, Makoto: *See—*
Hashimoto, Kinji; Inoue, Makoto; and Minamikawa, Junichi, 5,082,974, Cl. 568-41.000.

Inoue, Satoshi: *See—*
Motomura, Takehiko; Hagihara, Hitoshi; and Inoue, Satoshi, 5,081,940, Cl. 110-346.000.

Inoue, Shinya: *See—*
Taniguchi, Masao; Umezu, Kohei; Shirasaka, Tadashi; Inoue, Shinya; Shinpuku, Tetsuro; Mitsuka, Masayuki; and Hirata, Mayumi, 5,082,856, Cl. 514-423.000.

Inoue, Tatsuo; and Niimura, Tsutomu, to Sony Corporation. Video camera. 5,083,209, Cl. 358-228.000.

Inoue, Yasuo: *See—*
Morisaki, Kazuhiko; and Inoue, Yasuo, 5,083,225, Cl. 360-64.000.

Insko, Leo J., to Panel-Lok Hangers, Inc. Hanger and tool for suspended ceilings. 5,082,227, Cl. 248-343.000.

Institut Francais du Petrole: *See—*
Kohler, Norbert; and Zaitoun, Alain, 5,082,577, Cl. 252-8.551.

Integrated Power Components: *See—*
Frederick, W. Richard, 5,083,101, Cl. 333-181.000.

Interforce, Ltd.: *See—*
Gross, Hyman; Hatcher, Melvin J.; and Checkley, Jonathan R. P., 5,083,270, Cl. 364-408.000.

International Business Machines Corporation: *See—*
Frey, Alexander H., Jr., 5,083,229, Cl. 360-78.040.
Haff, Lyle E., Jr., 5,083,262, Cl. 395-500.000.

International Cellulose, Inc.: *See—*
Webb, John L.; Kilgore, Robert D.; and Patil, Shitalprasad N., 5,082,563, Cl. 210-631.000.

International Sensor Technology, Inc.: *See—*
Hoelsman, James W.; Hegland, Joel E.; Braunlich, Peter F.; and Tetzlaff, Wolfgang, 5,083,031, Cl. 250-484.100.

Interox (Societe Anonyme): *See—*
Legrand, Franc; Lecloux, Andre; and Deschrijver, Paul, 5,082,940, Cl. 544-353.000.

Inventio AG: *See—*
Reichmuth, Hugo, 5,082,102, Cl. 198-333.000.

Ippolito, Nicholas W. Roll-up beach towel kit. 5,081,727, Cl. 5-419.000.

Isham, William R.: *See—*
Crowther, Dale A.; and Isham, William R., 5,082,235, Cl. 248-918.000.

Ishibashi, Tadao: *See—*
Kuroda, Takashi; Yamada, Kazuhiro; Ishibashi, Tadao; Hayashida, Suetou; Kimura, Kyoichiro; and Sameshima, Masaru, 5,082,900, Cl. 525-211.000.

Ishibashi, Yoji; Ohmori, Takashi; Kato, Fumio; Kuroda, Michio; and Iizuka, Nobuyuki, to Hitachi, Ltd. Combustor for a gas turbine. 5,081,843, Cl. 60-733.000.

Ishida, Takashi; Ueda, Yoshikazu; Kubota, Teruji; Igarashi, Misao; Tanaka, Norichika; and Kamijo, Yasuhiko, to Chiba City & Tsukishima Kikai Kabushiki Kaisha. System for treating waste material in a molten state. 5,081,937, Cl. 110-246.000.

Ishida, Tokuji; Norita, Toshio; and Hasegawa, Jun, to Minolta Camera Kabushiki Kaisha. Image sensing device having direct drainage of unwanted charges. 5,083,207, Cl. 358-213.190.

Ishida, Toshihisa: *See—*
Tasaka, Shigeaki; Nakano, Nobuhiko; Maeda, Kazuya; Ishida, Toshihisa; Takahashi, Yoshiaki; Nakamura, Tadashi; Yamaue, Satoshi; and Nakamura, Kumiko, 5,082,761, Cl. 430-137.000.

Ishida, Toshimitsu: *See—*
Wakatsuki, Masao; Takano, Kaoru; Kitagawa, Kazuo; Urabe, Katsufumi; and Ishida, Toshimitsu, 5,082,635, Cl. 422-245.000.

Ishihara, Manabu: *See—*
Konishi, Ryoji; Oji, Akihito; Kawaji, Toshikuni; Makaya, Osami; Ishihara, Manabu; and Iwasa, Akira, 5,082,663, Cl. 424-445.000.

Ishihara, Toshinobu; Kubota, Tohru; Endo, Mikio; and Oikawa, Katsuyuki, to Shin-Etsu Chemical Co., Ltd. Conjugated diacetylene bond-containing silicon compound and method for producing same. 5,082,960, Cl. 556-444.000.

Ishii, Kazuo: *See—*
Kato, Eiichi; and Ishii, Kazuo, 5,082,759, Cl. 430-114.000.

Ishii, Kenichi: *See—*
Saitou, Toshihiko; Yamashita, Takashi; Ishii, Kenichi; Ogawa, Masanobu; Shibata, Shinya; Oda, Kenji; and Kume, Masaharu, 5,083,134, Cl. 343-713.000.

Ishii, Tooru: *See—*
Mitsui, Kiichiro; Ishii, Tooru; Sano, Kuinio; and Inoue, Akira, 5,082,820, Cl. 502-350.000.

Ishikawa Gasket Co., Ltd.: *See—*
Uchida, Tatsuro; and Yamada, Yoshio, 5,082,298, Cl. 277-235.00B.

Ishikawa, Toshihiro: *See—*
Tagaya, Nobuaki; Kuwahara, Hideyuki; Hashimoto, Takao; Komatsu, Noriko; Fukamachi, Keiko; Maeshima, Tsugio; Ishikawa, Toshihiro; and Ogawa, Tetsuro, 5,082,566, Cl. 210-656.000.

Ishikawajima-Harima Heavy Industries Co., Ltd.: *See—*
Koga, Minoru; Watanabe, Takenori; Kamata, Toshio; Morishima, Satoshi; Mizusawa, Minoru; and Kobayashi, Kazunori, 5,082,752, Cl. 429-20.000.
Motomura, Takehiko; Hagihara, Hitoshi; and Inoue, Satoshi, 5,081,940, Cl. 110-346.000.

Ishimori, Tsutomu: *See—*
Yasuda, Kikuo; Shibata, Kenyu; Minami, Nobuyoshi; Seki, Toshimi; Shiraiwa, Masafumi; Nakao, Tomio; Miyasaka, Katsuhiko; Ishimori, Tsutomu; Gotanda, Kotaro; and Sasaki, Takako, 5,082,844, Cl. 514-253.000.

Ishizuka, Hideki: *See—*
Okano, Masami; Takeuchi, Kunihiro; and Ishizuka, Hideki, 5,083,276, Cl. 364-424.050.

Ishizuka, Ichiro: *See—*
Sumimoto, Shinzaburo; Ishizuka, Ichiro; Ueda, Shiro; and Kai, Hiroyuki, 5,082,947, Cl. 548-243.000.

Ishizuka, Masahiro, to Mitsubishi Denki Kabushiki Kaisha. Device for forwarding semiconductor lead frames and method of operating the same. 5,082,165, Cl. 228-179.000.

Isnardi, Michael A.; and Smith, Terrence R., to General Electric Company. Chrominance processing apparatus for a compatible widescreen television system. 5,083,196, Cl. 358-12.000.

Iso, Tadashi: *See—*
Morita, Takakazu; Iso, Tadashi; Mita, Shiro; and Kawashima, Youichi, 5,082,836, Cl. 514-183.000.

Isoform: *See—*
De Snet, Gabriel, 5,081,859, Cl. 72-57.000.

Isozumi, Shuzoo, to Mitsubishi Denki Kabushiki Kaishi. Engine starter. 5,081,874, Cl. 74-7.00A.

Isozumi, Shuzou; and Konishi, Keiichi, to Mitsubishi Denki K.K. Starter motor. 5,081,875, Cl. 74-7.00R.

ISP Investments Inc.: *See—*
Liu, Kou-Chang; Vara, Fulvio J.; and Dougherty, James A., 5,082,874, Cl. 522-100.000.
Tazi, Mohammed, 5,082,910, Cl. 526-227.000.
Tazi, Mohammed; Login, Robert B.; and Kwak, Yoon T., 5,082,913, Cl. 526-272.000.

Isuzu Jidosha Kabushiki Kaisha: *See—*
Utida, Sirou; and Narita, Tosio, 5,082,161, Cl. 228-122.000.

Isuzu Motors Limited: *See—*
Matsuoka, Hiroshi, 5,081,970, Cl. 123-275.000.

Itabashi, Yuichi; and Hayashi, Takayuki, to Fuji Photo Film Co., Ltd. Heat-sensitive recording materials. 5,082,821, Cl. 503-200.000.

Itamura, Sumio; and Moritani, Tohei, to Kuraray Co., Ltd. Resin composition and multilayered structure. 5,082,743, Cl. 428-520.000.

Ito, Hideo: *See—*
Kawagoe, Kenji; Ito, Hideo; and Yokote, Masatsugu, 5,083,275, Cl. 364-424.050.

Ito, Masazumi: *See—*
Hanamoto, Hiroyuki; Higashio, Kimihiko; and Ito, Masazumi, 5,083,162, Cl. 355-218.000.

Ito, Mitsuru: *See—*
Asanuma, Tadashi; Yamamoto, Kazuhiko; Ito, Mitsuru; and Kawanishi, Kaoru, 5,082,893, Cl. 524-547.000.

Ito, Takahiro: *See—*
Chong, Teek F.; and Ito, Takahiro, 5,083,179, Cl. 357-42.000.

Ito, Yukio; Akazawa, Tadashi; and Noguchi, Takao, to Daido Tokushuko Kabushiki Kaisha; and Daido Machinery Ltd. Method for forming a lubricant coat on the surface of a material to be forged and a forging device provided with a lubricant coat forming member. 5,081,858, Cl. 72-43.000.

Itoh, Haruhiko: *See—*
Koseki, Tadao; Koseki, Akihiko; Hirata, Kohichi; and Itoh, Haruhiko, 5,082,484, Cl. 65-144.000.

Itoh, Michio: *See—*
Matsuo, Hideshige; Yamamoto, Isamu; Itoh, Michio; Sato, Kuniaki; Nakamura, Yoshihiro; Tomita, Akia; and Mihara, Yoshiki, 5,082,166, Cl. 228-189.000.

Itoh, Mikio: *See—*
Ushigami, Yoshiyuki; Konno, Toyohiko; Suga, Yozo; Ueno, Kiyoshi; Itoh, Mikio; Nishiyama, Toshio; and Takimoto, Kenichi, 5,082,509, Cl. 148-111.000.

Itoh, Seiga: *See—*
Kuga, Tetsuro; Sekine, Susumu; and Itoh, Seiga, 5,082,776, Cl. 435-69.700.

Itou, Kazunori: *See—*
Iwaki, Takashi; Itou, Kazunori; Matsumoto, Hiroshi; Suzuki, Hiroyuki; Shibata, Juzo; and Uematsu, Nobuyuki, 5,082,048, Cl. 165-1.000.

Itziegehl, Kurt: *See—*
Schweder, Herbert; Lochl, Klaus; Rausch, Wolfgang; Hannemann, Freidrich; Leitmont, Helmut; Hahn, Ditmar; and Itziegehl, Kurt, 5,082,441, Cl. 432-75.000.

Iwaki, Takashi; Itou, Kazunori; Matsumoto, Hiroshi; Suzuki, Hiroyuki; Shibata, Juzo; and Uematsu, Nobuyuki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho; and Nippon Steel Corporation. Hydrogen engine system with metal hydride container. 5,082,048, Cl. 165-1.000.

Iwamoto, Hirofumi: *See—*
Kawagishi, Hideyuki; Iwamoto, Hirofumi; and Onitsuka, Yoshihiro, 5,082,352, Cl. 359-63.000.

Iwasa, Akira: *See—*
Konishi, Ryoji; Oji, Akihito; Kawaji, Toshikuni; Makaya, Osami; Ishihara, Manabu; and Iwasa, Akira, 5,082,663, Cl. 424-445.000.

Iwato, Shuichi: *See—*
Matsui, Naoki; Iwato, Shuichi; Kaneto, Shuji; Kubo, Takami; Yamazaki, Masayuki; and Moriyama, Shigeru, 5,081,857, Cl. 72-6.000.

Iyer, S. Raja; Johnson, Calvin K.; and Cooke, Richard C., to Borden, Inc. Compositions for foundry molding processes utilizing reclaimed sand. 5,082,876, Cl. 523-145.000.

Izaki, Teruaki; Yoshida, Makoto; Osawa, Masami; Higuchi, Seijun; and Hisaaki, Sato, to Nippon Steel Corporation. Method of producing a high corrosion resistant plated composite steel strip. 5,082,536, Cl. 205-109.000.

J.A.D. Enterprises of New York, Inc.: *See—*
Santoro, Robert L., 5,082,268, Cl. 271-14.000.

J. I. Case Company: *See—*
Covington, Michael J.; and Orsborn, Jesse H., 5,081,828, Cl. 56-28.000.

J. M. Voith GmbH: *See—*
Martin, Eckhard; and Wiesse, Joachim, 5,081,950, Cl. 118-70.000.
Nagel, Gunther; Arbogast, Franz; and Peiz, Peter, 5,081,907, Cl. 91-497.000.
Schiel, Christian, 5,081,759, Cl. 29-116.100.

Jackson, David A.; McGee, Edward; and Parker, David A., to BP Chemicals Limited. Ensiling composition. 5,082,675, Cl. 426-54.000.

Jackson, James E.: *See—*
Seiler, Nancy J.; Allen, Junius D.; Jackson, James E.; and Lynch, Samuel C., 5,082,069, Cl. 175-5.000.

Jackson, Terrill E. Pit area for a race track. 5,081,803, Cl. 52-33.000.

Jackson, Thomas F.: *See—*
Hunnell, Jack E.; Hunnell, John E.; and Jackson, Thomas F., 5,082,254, Cl. 269-269.000.

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Hill, Lawrence A.; Jacobs, Michael E.; Kroll, Arthur S.; and Williams, Ralph E., 5,083,166, Cl. 355-260.000.

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Most, Egbert; Knop, Reinhard; and Meyer, Runald, 5,081,951, Cl. 118-126.000.

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Stockwell, David M.; Koermer, Gerald S.; and Jaglowski, William M., 5,082,814, Cl. 502-68.000.

Jahn, Hans-Georg, to Heidelberger Druckmaschinen AG. Rotary printing press with device for engaging or disengaging a rubber-covered cylinder with an impression cylinder and/or a plate cylinder. 5,081,927, Cl. 101-218.000.

Jamas, Spiros; Rha, ChoKyun; and Sinskey, Anthony J., to Massachusetts Institute of Technology. Glucan composition and process for preparation thereof. 5,082,936, Cl. 536-123.000.

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Steiner, James P., 5,083,086, Cl. 324-533.000.

Jannson, Joanna L.: *See—*
Jannson, Tomasz P.; Jannson, Joanna L.; and Rich, Christopher C., 5,083,219, Cl. 359-1.000.

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Janssens, Wilhelmus: *See—*
Vanmaele, Luc J.; and Janssens, Wilhelmus, 5,082,823, Cl. 503-227.000.

Janulis, Eugene P. Achiral fluorine-containing liquid crystals. 5,082,587, Cl. 252-299.010.

Jarret, Bertrand; and Legrand, Joel, to Cegelec. Optical fiber connector endpiece, a method of assembling it, and a method of connecting two optical fibers using such endpieces. 5,082,377, Cl. 385-60.000.

Jaruzelski, John J.: *See—*
Martella, David J.; and Jaruzelski, John J., 5,082,470, Cl. 44-304.000.

Jarvis, Robert N. Device for supporting and sighting a firearm. 5,081,783, Cl. 42-94.000.

Jasperson, Keith E.: *See—*
Peterson, Ronald C.; Jasperson, Keith E.; and Schilling, Robert J., 5,083,140, Cl. 346-107.00A.

Jatco Corporation: *See—*
Imamura, Hiroyuki, 5,082,095, Cl. 192-3.300.

Jautelat, Manfred: *See—*
Bachem, Henning; Schroder, Georg; Suling, Carlhans; Reiners, Jurgen; Muszik, Janos; Arlt, Dieter; Jautelat, Manfred; and Schroer, Wolf-Dieter, 5,082,527, Cl. 162-164.300.

Jazzar, M. Omar A. Precast concrete building units and method of manufacture thereof. 5,081,805, Cl. 52-79.200.

Jennmar Corporation: *See—*
Frease, Jerry E.; Stankus, John C.; Stewart, Eugene H.; and Grissinger, Glen S., 5,082,399, Cl. 405-259.600.

Jeram, Edward M.; Ward, Brian J.; and Martin, Donald A., to General Electric Company. Low compression set, oil and fuel resistant, liquid injection moldable, silicone rubber. 5,082,886, Cl. 524-403.000.

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Sasaki, Michiaki; Yamamoto, Kiyokazu; and Matsuki, Toshiyuki, 5,082,426, Cl. 417-198.000.

Jimbo, Takashi: *See—*
Komiyama, Tadashi; Kuboyama, Hisaharu; Jimbo, Takashi; Watanabe, Hiroyoshi; Tokumoto, Shuichi; Endoh, Yumiko; Sugiyama, Eiichi; and Naganuma, Yoshitaro, 5,082,972, Cl. 564-480.000.

Jimenez, Antonio; and Combepine, Michel, to Mefina S.A. Control pedal for an electric machine. 5,083,069, Cl. 318-558.000.

Job, Robert C., to Shell Oil Company. Olefin polymerization catalyst. 5,082,907, Cl. 526-119.000.

John Wyeth and Brother Limited: *See—*
Cliffe, Ian A., 5,082,843, Cl. 514-253.000.

Johnson, Brian H., to UOP. Integrated process for C_4, C_5 and C_6 isomerization. 5,082,989, Cl. 585-748.000.

Johnson, Calvin K.: *See—*
Iyer, S. Raja; Johnson, Calvin K.; and Cooke, Richard C., 5,082,876, Cl. 523-145.000.

Johnson, Charles S.; and Hart, Robert, to National-Oilwell (U.K.) Limited. Subsea well hanger. 5,082,060, Cl. 166-339.000.

Johnson, Chris: *See—*
Rinehart, Ronald K.; and Johnson, Chris, 5,081,761, Cl. 29-428.000.

Johnson, Gary E.; and Schneider, John T., to Mate Punch & Die Co. Punch assembly. 5,081,891, Cl. 83-140.000.

Johnson, Richard T.: *See—*
Karolek, Neil C.; Inkmann, Mark S.; Johnson, Richard T.; Kondrakiewicz, Jerome A.; Lenhardt, Brett M.; and Saari, David W., 5,082,075, Cl. 180-68.200.

Johnson, Robert R. Smoking article. 5,082,008, Cl. 131-194.000.

Joji, Shimizu, to Nissan Motor Co., Ltd. Heating apparatus for automotive vehicle. 5,082,174, Cl. 237-2.00A.

Jonasson, Linda. Device for preventing involuntary micturition. 5,082,006, Cl. 128-885.000.

Jones, Charles W., Sr. Lamp modulating circuitry for incandescent and fluorescent lamps. 5,083,064, Cl. 315-294.000.

Jones, Everett E., to Boeing Company, The. Automated drilling station. 5,081,763, Cl. 29-568.000.

Jones, Kenneth R., to Globe-Union Inc. Pressure vessel construction for a metal oxide-hydrogen battery. 5,082,754, Cl. 429-101.000.

Jones, Lloyd G.; Yeh, Charles S.; and Chow, Christopher V., to Mobil Oil Corporation. Apparatus for gravel packing wells. 5,082,052, Cl. 166-51.000.

Jones, Mark A.: *See—*
Grooms, John M.; and Jones, Mark A., 5,082,238, Cl. 251-61.500.

Jones, Neil, to Group Lotus PLC of Norwich. Vehicle suspension device. 5,082,308, Cl. 280-707.000.

Jones, Rebecca L.: *See—*
Olbrich, Michael E.; Jones, Rebecca L.; and Fenstermaker, Roger W., 5,082,987, Cl. 585-737.000.

Jorgensen, Diane V.: *See—*
Breckenridge, Lloyd L.; Jorgensen, Diane V.; and Sapre, Ajit V., 5,082,983, Cl. 585-475.000.

Jose, Natividad R.: *See—*
Ounanian, Hovic O.; Jose, Natividad R.; DiSomma, Joseph; and Gedeon, Harvey, 5,082,660, Cl. 424-63.000.

Joslyn Corporation: *See—*
Tonkiss, David W.; and Young, Thomas F., 5,082,454, Cl. 439-320.000.

Jouveinal S.A.: *See—*
Calvet, Alain P.; Junien, Jean-Louis; Pascal, Yves R.; Pascaud, Xavier B.; and Roman, Francois J., 5,082,937, Cl. 540-496.000.

Joy, William; and Garner, Robert B., to Sun Microsystems, Inc. BISC with interconnected register ring and selectively operating portion of the ring as a conventional computer. 5,083,263, Cl. 395-425.000.

Judd, Daniel R. Contact sensing module embodying loop power supply and state sensing for relays and other contacts. 5,083,116, Cl. 340-644.000.

Juki Corporation: *See—*
Bozoglou, Pantelis, 5,081,945, Cl. 112-121.260.

Julian, Michael D., to Hughes Aircraft Company. Local compensation of failed elements of an active antenna array. 5,083,131, Cl. 342-372.000.

Junghans Uhren GmbH: *See—*
Ganter, Wolfgang; and Hodapp, Wolfram, 5,083,123, Cl. 340-825.570.

Junien, Jean-Louis: *See—*
Calvet, Alain P.; Junien, Jean-Louis; Pascal, Yves R.; Pascaud, Xavier B.; and Roman, Francois J., 5,082,937, Cl. 540-496.000.

Juros, Karel B. F., to Cooper-Industries, Inc. Cutter head with flexible stabilizer. 5,081,769, Cl. 30-261.000.

Kabasawa, Junichi: *See—*
Kuramitsu, Mikihiro; Kabasawa, Junichi; and Watanabe, Nobuhisa, 5,082,435, Cl. 425-117.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*
Katsuta, Masanori, 5,081,895, Cl. 84-433.000.
Takauji, Kiyomi, 5,081,897, Cl. 84-604.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Miyaoka, Satoshi; and Tachinoh, Masaaki, 5,081,838, Cl. 60-444.000.
Wakatsuki, Masao; Takano, Kaoru; Kitagawa, Kazuo; Urabe, Katsufumi; and Ishida, Toshimitsu, 5,082,635, Cl. 422-245.000.

Kabushiki Kaisha KOSMEK: *See—*
Yonezawa, Keitaro, 5,082,021, Cl. 137-596.200.

Kabushiki Kaisha Okuma Tekkosho: *See—*
Yamamoto, Kyoichi; and Hasebe, Takao, 5,083,280, Cl. 364-474.300.

Kabushiki Kaisha Toritsu Industry: *See—*
Tajima, Masao, 5,082,875, Cl. 523-103.000.

Kabushiki Kaisha Toshiba: *See—*
Abuyama, Yasuo, 5,083,216, Cl. 358-451.000.
Anno, Hidero; and Ono, Katsuhiro, 5,083,017, Cl. 250-213.0VT.
Chong, Teek F.; and Ito, Takahiro, 5,083,179, Cl. 357-42.000.
Hino, Rika; and Osawa, Kimio, 5,083,286, Cl. 395-115.000.
Horie, Atsushi; and Usami, Kimiyoshi, 5,083,047, Cl. 307-465.000.
Hosoi, Takashi, 5,083,290, Cl. 364-708.000.
Kawasaki, Kazuo, 5,082,353, Cl. 359-63.000.
Kawasaki, Schuichi; Yamazaki, Nobuo; and Sato, Takeshi, 5,081,996, Cl. 128-661.090.
Kobayashi, Takaichi, 5,081,742, Cl. 16-337.000.
Komano, Haruki; Hamasaki, Toshihiko; and Takigawa, Tadahiro, 5,083,033, Cl. 250-492.200.
Kondou, Yuu; and Ono, Tomio, 5,083,056, Cl. 310-332.000.
Nagasawa, Hironori, 5,083,046, Cl. 307-448.000.
Nishioka, Syoji, 5,083,230, Cl. 360-78.040.
Sawaya, Hiromichi, 5,083,189, Cl. 357-72.000.
Shima, Takeshi; and Kamatani, Yukio, 5,083,285, Cl. 395-24.000.
Suzuki, Toshiyuki, 5,083,032, Cl. 250-492.200.
Syobatake, Yasuro; and Kumaki, Yoshinari, 5,083,269, Cl. 395-425.000.
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Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Iwaki, Takashi; Itou, Kazunori; Matsumoto, Hiroshi; Suzuki, Hiroyuki; Shibata, Juzo; and Uematsu, Nobuyuki, 5,082,048, Cl. 165-1.000.

Kaczmarczik, James M.: *See—*
Lasch, James E.; Kaczmarczik, James M.; and Klein, James A., 5,082,715, Cl. 428-143.000.

Kadomukai, Yuzo: *See—*
Fukushima, Masao; Murakami, Kei; Kuriyama, Shigeru; Nakamura, Yozo; Maeda, Yuji; Nakamura, Kenichi; Mashino, Keiichi; and Kadomukai, Yuzo, 5,083,038, Cl. 290-40.00A.

Kadowaki, Tatsuhiko: *See—*
Morichika, Toshiaki; Tani, Toshio; Sakai, Chiaki; Koshimoto, Hideo; and Kadowaki, Tatsuhiko, 5,082,750, Cl. 428-694.000.

Kagey, Lane O., to AST Research, Inc. Asynchronous circuit with edge-triggered inputs. 5,083,049, Cl. 307-480.000.

Kahlbaugh, Brad E.; Reinhart, Susan B.; Dudrey, Denis J.; and Herman, John T., to Donaldson Company, Inc. Filtration arrangement and method. 5,082,476, Cl. 55-97.000.

Kahlman, Josephus A. H. M., to U.S. Philips Corporation. Arrangement for reproducing an electric signal. 5,083,227, Cl. 360-77.130.

Kahn, Maria S.: *See—*
Manning, Ronald F.; and Kahn, Maria S., 5,082,785, Cl. 435-252.320.

Kahnau, Guenter: *See—*
Koch, Peter; Kahnau, Guenter; Glaser, Peter; Habbel, Georg; Kunz, Stefan; and Schmatelka, Bernhard, 5,082,175, Cl. 237-12.30C.

Kahng, Gredo W. Connector for a fishing device. 5,081,785, Cl. 43-44.830.

Kai, Hiroyuki: *See—*
Sumimoto, Shinzaburo; Ishizuka, Ichiro; Ueda, Shiro; and Kai, Hiroyuki, 5,082,947, Cl. 548-243.000.

Kai, Takashige: *See—*
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Kai, Yoshiaki: *See—*
Suzuki, Takashi; and Kai, Yoshiaki, 5,082,709, Cl. 428-64.000.

Kain, William S.; and Staker, Donald D., to Henkel Corporation. Amides of polycarboxylic acids as rheological additives for coal-water slurries. 5,082,469, Cl. 44-280.000.

Kaiser Aerospace and Electronics Corporation: *See—*
Kalmanash, Michael H., 5,082,354, Cl. 350-339.00F.

Kaji, Hiroo: *See—*
Katsura, Toru; and Kaji, Hiroo, 5,082,724, Cl. 428-303.000.

Kajiyama, Shigeo: *See—*
Suzuki, Yoshitsugu; Iizuka, Shougo; Kajiyama, Shigeo; Suzuki, Sanae; and Kudo, Shigeji, 5,082,253, Cl. 269-45.000.

Kakaguchi, Kazuhiro, to Fujitsu Limited. Paper detecting apparatus for printer. 5,082,384, Cl. 400-708.000.

Kalamazoo Holdings, Inc.: *See—*
Todd, Paul H., Jr.; and Guzinski, James A., 5,082,975, Cl. 568-315.000.

Kaldany, Antoine, to New England Deaconess Hospital. Surgical access device. 5,082,005, Cl. 128-850.000.

Kalmanash, Michael H., to Kaiser Aerospace and Electronics Corporation. Optical switch and color selection assembly. 5,082,354, Cl. 350-339.00F.

Kaltenbach & Voight GmbH & Co.: *See—*
Lohn, Gerd, 5,082,443, Cl. 433-80.000.

Kamata, Toshio: *See—*
Koga, Minoru; Watanabe, Takenori; Kamata, Toshio; Morishima, Satoshi; Mizusawa, Minoru; and Kobayashi, Kazunori, 5,082,752, Cl. 429-20.000.

Kamatani, Yukio: *See—*
Shima, Takeshi; and Kamatani, Yukio, 5,083,285, Cl. 395-24.000.

Kamath, Venkatesh H.; and Wong, Lam F., to Xerox Corporation. Development module for a color printer. 5,083,164, Cl. 355-245.000.

Kamezaki, Yasushi, to Mita Industrial Co., Ltd. Sheet transport device. 5,082,270, Cl. 271-109.000.

Kamijo, Yasuhiko: *See—*
Ishida, Takashi; Ueda, Yoshikazu; Kubota, Teruji; Igarashi, Misao; Tanaka, Norichika; and Kamijo, Yasuhiko, 5,081,937, Cl. 110-246.000.

Kaminski, Ronald S., to Owens-Illinois Plastic Products Inc. Apparatus for applying labels in the molds of a plastic blow molding machine. 5,082,439, Cl. 425-504.000.

Kamisakamoto, Akira: *See—*
Chikamori, Takeshi; Ohkubo, Masaki; Kamisakamoto, Akira; Imai, Shoji; Tsubota, Shunichi; Uemura, Hideyuki; and Wakutani, Shinichi, 5,081,974, Cl. 123-478.000.

Kamiunten, Shoji: *See—*
Ochiai, Koichi; Aoshima, Shigeru; and Kamiunten, Shoji, 5,081,866, Cl. 73-204.210.

Kamiya, Atsushi, to Asmo Co., Ltd. Liquid-level detecting structure. 5,083,115, Cl. 340-624.000.

Kamiyama, Satoshi; and Ohnaka, Kiyoshi, to Matsushita Electric Industrial Co., Ltd. Methods for soldering semiconductor devices. 5,082,162, Cl. 228-123.000.

Kampf GmbH & Co. Maschinenfabrik: *See—*
Molz, Udo, 5,081,750, Cl. 26-89.000.

Kanahara, Naoyuki; and Furihata, Tetsuo, to Dowa Mining Co., Ltd. Method of metallizing non-oxide ceramics. 5,082,163, Cl. 228-124.000.

Kanazawa, Hirotaka; and Ohmura, Hiroshi, to Mazda Motor Corporation. Front and rear wheel turning system for vehicle. 5,082,080, Cl. 180-140.000.

Kanda, Minoru; Komatsu, Mikio; Nunoya, Hidetsugu; Fujii, Yasuhiro; and Abiko, Toshio, to Matsushita Electric Works, Ltd. Planar antenna with active circuit block. 5,083,132, Cl. 343-700.0MS.

Kane, John M.: *See—*
Palfreyman, Michael G.; Wiech, Norbert L.; Cheng, Hsien C.; and Kane, John M., 5,082,837, Cl. 514-183.000.

Kanemitsu, Norihiro: *See—*
Umeda, Takashi; Kanemitsu, Norihiro; Murakami, Kousuke; Takahara, Kuniaki; and Sakurai, Ushio, 5,082,078, Cl. 180-90.000.

Kaneta, Satoshi: *See—*
Sawada, Shigeru; Maruyama, Mitsuaki; Sawada, Kenji; Nakagawa, Hitoshi; Tsujimoto, Jun; Kasai, Shinichi; Takeshita, Masahiko; Kaneta, Satoshi; Koiwai, Masahiro; and Niki, Hiroshi, 5,083,170, Cl. 355-319.000.

Kaneto, Shuji: *See—*
Matsui, Naoki; Iwato, Shuichi; Kaneto, Shuji; Kubo, Takami; Yamazaki, Masayuki; and Moriyama, Shigeru, 5,081,857, Cl. 72-6.000.

Kang, Steve. Rotatable electrical connector. 5,082,448, Cl. 439-22.000.

Kanyuck, Emil L.; and Winters, Carl J., Jr. Gun loading device. 5,081,781, Cl. 42-90.000.

Kao Corporation: *See—*
Tamura, Tadashi; Kiyomine, Akira; Tanaka, Michio; Nishizawa, Yoshinori; Tagami, Hidetoshi; Ogawa, Masahiko; Yoshihara, Toru; Muraoka, Tsutomu; and Kawase, Jiro, 5,082,467, Cl. 8-409.000.

Kao, James. Solder-removing tool. 5,081,739, Cl. 15-341.000.

Kapp, Richard: *See*—
Heitzler, Viktor; and Kapp, Richard, 5,083,193, Cl. 357-74.000.
Kappler, Patrick; and Perillon, Jean-Luc, to Atochem. Hardenable, fluorinated copolymer, process for its manufacture and its application in varnishes and paints. 5,082,911, Cl. 526-249.000.
Karabedian, James A.; and Blackwelder, Maurice W., to Owens-Illinois Plastic Products Inc. Polystyrene foam sheet manufacture. 5,082,608, Cl. 264-46.100.
Karabin, Tadeusz; and Broome, Frank H., to Majco Building Specialties, L.P. Thermally activated vent damper. 5,082,172, Cl. 236-1.00G.
Karakida, Ken-ichi: *See*—
Fukuda, Yuzuru; Nishikawa, Masayuki; Yagi, Shigeru; and Karakida, Ken-ichi, 5,082,760, Cl. 430-127.000.
Kardorff, Uwe; Neubauer, Hans-Juergen; Leyendecker, Joachim; Kuenast, Christoph; Hofmeister, Peter; and Krieg, Wolfgang, to BASF Aktiengesellschaft. Cyclopropanecarboxamides and their use for controlling pests. 5,082,852, Cl. 514-351.000.
Karius, Klaus-Dietmar: *See*—
Frye, Gunter; Karius, Klaus-Dietmar; Kruse, Heinz-Josef; Sippel, Achim; Meyer, Jurgen; and Primus, Michael, 5,081,931, Cl. 102-489.000.
Kariya, Tadaaki: *See*—
Miura, Masato; Shimura, Tatsuo; Kariya, Tadaaki; Kawauchi, Norihiro; and Kurita, Sinichi, 5,083,180, Cl. 357-43.000.
Karolek, Neil C.; Inkmann, Mark S.; Johnson, Richard T.; Kondrakiewicz, Jerome A.; Lenhardt, Brett M.; and Saari, David W., to Globe-Union Inc. Method and apparatus for thermal control of automotive components. 5,082,075, Cl. 180-68.200.
Karp, Ricki S.: *See*—
Walker, Robert W.; Karp, Ricki S.; and Hayter, John S., 5,083,272, Cl. 364-412.000.
Karrer, Friedrich; and Rindlisbacher, Alfred, to Ciba-Geigy Corporation. Use of ethyl 2-[4-(3,5-difluorophenoxy)phenoxy]ethylcarbamate for controlling cicadas which damage rice crops. 5,082,860, Cl. 514-486.000.
Kasahara, Akihiko: *See*—
Sadano, Yutaka; Nakashima, Yuuji; Tanaka, Takashi; Kawasaki, Takatoshi; Shibata, Shinji; Aoyagi, Hikaru; Nishizawa, Yoshio; and Kasahara, Akihiko, 5,082,167, Cl. 228-258.000.
Kasai, Junichi; Imai, Hiroshi; and Nanbu, Tatuyoshi, to Nissan Motor Company, Limited. Sound field producing apparatus. 5,083,311, Cl. 381-63.000.
Kasai, Shinichi: *See*—
Sawada, Shigeru; Maruyama, Mitsuaki; Sawada, Kenji; Nakagawa, Hitoshi; Tsujimoto, Jun; Kasai, Shinichi; Takeshita, Masahiko; Kaneta, Satoshi; Koiwai, Masahiro; and Niki, Hiroshi, 5,083,170, Cl. 355-319.000.
Kasakevich, Mark L.; Krasner, Donald H.; Secrist, Jerry W.; and Meuhlner, Roland O., to Shell Oil Company. Method for improvement of polybutylene pipe strength. 5,082,613, Cl. 264-178.00R.
Kashima, Hiroyuki; Muto, Kiyoshi; Kinoshita, Naohisa; Tsuzuki, Toshihiro; and Hasegawa, Makoto, to Brother Kogyo Kabushiki Kaisha. Photoconductive cartridge having shutter locking device for holding opening of the cartridge in closed position. 5,083,158, Cl. 355-200.000.
Kashima, Hiroyuki: *See*—
Hirayama, Takanobu; Kinoshita, Naohisa; Kashima, Hiroyuki; Hasegawa, Makoto; Tsuzuki, Toshihiro; and Muto, Kiyoshi, 5,082,269, Cl. 271-65.000.
Kashimura, Masahiko, to NEC Corporation. BiMOS tri-state output buffer. 5,083,048, Cl. 307-473.000.
Kast, Howard B., to General Electric Company. Spill proof check valve apparatus. 5,082,245, Cl. 251-149.600.
Kataoka, Hideaki; and Oi, Nakao, to Fuji Photo Film Co., Ltd. Cartridge for developed photographic film. 5,083,155, Cl. 355-75.000.
Kataoka, Hiroshi: *See*—
Schooley, David A.; Kataoka, Hiroshi; and Kramer, Steven J., 5,082,828, Cl. 514-12.000.
Katayama, Aiichi; Nakatsugawa, Kenji; Sekiya, Hitoshi; and Nakamura, Takafumi, to Anritsu Corporation. Transition state detecting device and measuring device using the same. 5,083,282, Cl. 364-487.000.
Katayama, Hiroyuki: *See*—
Miyake, Tomoyuki; Katayama, Hiroyuki; Nakayama, Junichiro; Murakami, Yoshiteru; and Ohta, Kenji, 5,082,690, Cl. 427-130.000.
Kato, Eiichi; and Ishii, Kazuo, to Fuji Photo Film Co., Ltd. Liquid developer for electrostatic photography. 5,082,759, Cl. 430-114.000.
Kato, Fumio: *See*—
Ishibashi, Yoji; Ohmori, Takashi; Kato, Fumio; Kuroda, Michio; and Iizuka, Nobuyuki, 5,081,843, Cl. 60-733.000.
Kato, Hideyuki, to Mazada Motor Manufacturing U.S.A. Corp. Method and apparatus for calibrating a vision guided robot. 5,083,073, Cl. 318-577.000.
Kato, Hironori: *See*—
Bannai, Hiroyuki; and Kato, Hironori, 5,082,451, Cl. 439-164.000.
Kato, Hisao, to Mitsubishi Denki K.K. Apparatus for predicting the lifetime of cable for movable portion of industrial robot. 5,083,284, Cl. 364-508.000.
Kato, Sinji; Takagi, Soya; Kawasaki, Minoru; Mori, Kazuhiko; and Ueda, Katsuhiko, to Toyota Jidosha Kabushiki Kaisha. Corrosion-resistant alloy for build-up welding. 5,082,625, Cl. 420-453.000.
Kato, Takeo: *See*—
Yamagata, Hideo; Kitamoto, Noriyuki; Kato, Takeo; Tsukagoshi, Norihiro; and Udaka, Shigezo, 5,082,781, Cl. 435-201.000.
Kato, Yuji, to Nissan Motor Company, Ltd. System and method for controlling vehicle speed to prevent gear shift shock applicable to automatic transmission equipped vehicles. 5,081,887, Cl. 74-866.000.
Katori, Tatsuhiko: *See*—
Tokizawa, Minoru; Asaoka, Takemitsu; Matsuda, Hideaki; and Katori, Tatsuhiko, 5,082,948, Cl. 548-342.000.
Katsuki, Kimio: *See*—
Yagyu, Takashi; Tanaka, Soutarou; and Katsuki, Kimio, 5,081,905, Cl. 91-461.000.
Katsura, Toru; and Kaji, Hiroo, to Mitsubishi Paper Mills Limited. Photograhic paper support. 5,082,724, Cl. 428-303.000.
Katsurashima, Wataru: *See*—
Akasaka, Nobuhiro; Zakoh, Toshiaki; Yamanishi, Toru; Katsurashima, Wataru; and Ogasawara, Ichiro, 5,082,347, Cl. 385-114.000.
Katsuta, Masanori, to Kabushiki Kaisha Kawai Gakki Seisakusho. Keyboard. 5,081,895, Cl. 84-433.000.
Kauffman, William J.; Lilley, George L.; and Ruch, David E., to Armstrong World Industries, Inc. Tension floor covering with reinforcing layer. 5,082,708, Cl. 428-47.000.
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Kelly, James A.: *See*—
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Kemeny, George A.; and Deis, Daniel W., to Westinghouse Electric Corp. Electromagnetic launcher with muzzle velocity adjustment. 5,081,901, Cl. 89-8.000.
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Kennametal Inc.: *See—*
Niebauer, Kenneth L., 5,082,401, Cl. 407-114.000.
Kennedy, Jerry L. Tobacco spearing system. 5,081,827, Cl. 56-27.500.
Kennedy, Peter D., to Motorola, Inc. Bit plane partitioning for graphic displays. 5,083,257, Cl. 395-131.000.
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Stolzer, Armin, 5,081,890, Cl. 83-13.000.
Kevern, Thomas C.: *See—*
Ambrose, William B.; and Kevern, Thomas C., 5,082,992, Cl. 800-200.000.
Keyser, Andrew G., to United Technologies Corporation. Thrust reverser assembly. 5,082,209, Cl. 244-110.00B.
Khavkin, Boris. Vehicle suspension system providing continuous vertical orientation of the ground wheel. 5,082,306, Cl. 280-661.000.
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Langer, Matthew E.; Khorshahi, Ferial; Aronson, Michael P.; and Hessel, John F., 5,082,578, Cl. 252-8.700.
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Sugiyama, Toshihisa; Yoshioka, Mamoru; Nakata, Kunihiko; Miyake, Takashi; and Kidokoro, Toru, 5,081,842, Cl. 60-612.000.
Kikkawa, Kenji: *See—*
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Kikuchi, Kazuto, to Sanden Corporation. Axial sealing mechanism for a scroll type compressor. 5,082,432, Cl. 418-55.500.
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Kikuhara, Takashi; Shitamura, Osamu; and Kondo, Yasuo, to Hitachi, Ltd. Work roll for metal rolling. 5,081,760, Cl. 29-130.000.
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Webb, John L.; Kilgore, Robert D.; and Patil, Shitalprasad N., 5,082,563, Cl. 210-631.000.
Kim, Bang M.: *See—*
Choi, Tak-Ming; Konrad, Adalbert; Kim, Bang M.; and Carroll, James J., Sr., 5,082,436, Cl. 425-174.80R.
Kim, Byung-Woong, to Bowon Trading Co., Ltd. Picture frame. 5,081,777, Cl. 40-152.000.
Kim, Dong J.: *See—*
Chang, Yun S.; and Kim, Dong J., 5,082,694, Cl. 427-239.000.
Kim, Min S., to SamSung Electron Devices Co., Ltd. Panel of color cathode ray tube. 5,083,057, Cl. 313-479.000.
Kimbara, Hidenori: *See—*
Gaku, Morio; and Kimbara, Hidenori, 5,082,402, Cl. 408-1.00R.
Kimberly-Clark Corporation: *See—*
Gross, James R.; and Harland, Ronald S., 5,082,723, Cl. 428-283.000.
Kimpel, Alvin A.: *See—*
Owens, Brian S.; and Kimpel, Alvin A., 5,082,247, Cl. 251-326.000.
Kimura, Kyoichiro: *See—*
Kuroda, Takashi; Yamada, Kazuhiro; Ishibashi, Tadao; Hayashida, Suetou; Kimura, Kyoichiro; and Sameshima, Masaru, 5,082,900, Cl. 525-211.000.
Kimura, Shigeo: *See—*
Kusaka, Kensaku; Suzuki, Yoshihiko; Kimura, Shigeo; Hosoi, Atsushi; Adachi, Hiroyuki; and Kinoshita, Masahide, 5,083,168, Cl. 355-285.000.
Kin, Narihiko, to Brother Kogyo Kabushiki Kaisha. Tool exchange device for a machine tool. 5,081,762, Cl. 29-568.000.
Kinbara, Yoshihide; Nishikawa, Morihisa; and Ozaki, Yoshio, to Mitsubishi Denki K.K. Waveform control device for electrical discharge machining apparatus. 5,083,001, Cl. 219-69.180.
Kindiger, Bryan: *See—*
Strissel, Jerry; Pollak, George; and Kindiger, Bryan, 5,082,993, Cl. 800-200.000.
King, John F.: *See—*
McCaman, Michael T.; and King, John F., 5,082,775, Cl. 435-69.700.
Kinoshita, Masahide: *See—*
Kusaka, Kensaku; Suzuki, Yoshihiko; Kimura, Shigeo; Hosoi, Atsushi; Adachi, Hiroyuki; and Kinoshita, Masahide, 5,083,168, Cl. 355-285.000.
Kinoshita, Naohisa: *See—*
Hirayama, Takanobu; Kinoshita, Naohisa; Kashima, Hiroyuki; Hasegawa, Makoto; Tsuzuki, Toshihiro; and Muto, Kiyoshi, 5,082,269, Cl. 271-65.000.
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Kiraly, Arpad: *See—*
Molnar, Csaba; Hajos, Gyorgy; Szporny, Laszlo; Toth, Jozsef; Kiraly, Arpad; Boor nee Mezei, Anna; Csorgei, Janos; Szekely, Kristina; Forgacs, Lilla; Fekete, Gyorgy; Herenyi, Bulcsu; Holly, Sandor; and Szunyog, Jozsef, 5,082,835, Cl. 514-180.000.
Kirby, David B.: *See—*
Cur, Nihat O.; Kruck, Richard W.; White, William S.; and Kirby, David B., 5,082,335, Cl. 312-401.000.
Kirch, Timothy O.: *See—*
Walles, Wilhelm E.; Achille, Felix; Fiero, Terry H.; Gregory, Steve D.; Kirch, Timothy O.; and Stevens, Bradley D., 5,082,740, Cl. 428-461.000.
Kirchhoff, Bernd; and Mecklenfeld, Hermann, to O&K Orenstein & Koppel Aktiengesellschaft. Vibrating screen crusher. 5,082,187, Cl. 241-84.000.
Kiriyama, Hiroshi: *See—*
Saito, Tsukasa; Kiriyama, Hiroshi; and Noguchi, Toshiaki, 5,082,195, Cl. 242-199.000.
Kirkby, Peter. Surge protection assembly for insulating flanges. 5,083,233, Cl. 361-117.000.
Kirkpatrick, Allen R., to Epion Corporation. Diamond films and method of growing diamond films on nondiamond substrates. 5,082,359, Cl. 359-642.000.
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Kishida, Kozo; Shishiuchi, Hiromi; and Mimura, Takao, to Seiko Epson Corporation. Printer for monochrome and color printing. 5,082,381, Cl. 400-216.000.
Kita, Masahiro: *See—*
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Takeda, Naohiro; Otani, Yuzo; Okajima, Nariaki; and Kita, Masahiro, 5,082,730, Cl. 428-336.000.
Kitagawa, Kazuo: *See—*
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Kitahara, Mikio; Machida, Koichi; Kubo, Takayuki; Torikai, Motoyuki; and Asahina, Koutarou, to Mitsui Toatsu Chemicals, Inc. Semiconductor sealing composition containing epoxy resin and polymaleimide. 5,082,880, Cl. 523-466.000.
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Kitao, Satoshi: *See—*
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Kiyohara, Toshimi: *See—*
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Mayfield, Larry; Russo, Thomas; Klausner, Kenneth; and Shalotsky, Charles, 5,082,652, Cl. 424-47.000.
Klayh, John A.: *See—*
Thacher, Kerry E.; Sumka, Gary H.; Barakat, Mohamed A.; Hancharyk, John S.; and Klayh, John A., 5,083,271, Cl. 364-411.000.
Kleffner, Hans W.: *See—*
Losch, Rolf; Orth, Winfried; Weiss, Wolfgang; and Kleffner, Hans W., 5,082,944, Cl. 546-294.000.
Klein, James A.: *See—*
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Klein, Willem: *See—*
Rook, Cornelis; and Klein, Willem, 5,082,438, Cl. 425-358.000.
Klemann, Lawrence P.: *See—*
Yarger, Ronald G.; Klemann, Lawrence P.; and Finley, John W., 5,082,683, Cl. 426-601.000.
Klessinger, Dieter: *See—*
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Klimchak, Robert J.: *See—*
Lenk, Robert P.; Tomsho, Michelle L.; Suddith, Robert L.; and Klimchak, Robert J., 5,082,664, Cl. 424-450.000.

Kloosterboer, Johan G.: *See*—
Eguchi, Shuji; Kloosterboer, Johan G.; and Broer, Dirk J., 5,082,559, Cl. 210-198.200.

Klose, Karl W.; and Benjamin, Gary H., to Cooper Tire & Rubber Company. Tire carcass transfer robot. 5,082,519, Cl. 156-396.000.

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Knight, George W.: *See*—
Sawyer, Lawrence H.; White, Marvin A.; and Knight, George W., 5,082,899, Cl. 525-74.000.

Knop, Reinhard: *See*—
Most, Egbert; Knop, Reinhard; and Meyer, Runald, 5,081,951, Cl. 118-126.000.

Knowles, Daniel B., to Eastman Kodak Company. Apparatus and methods for extracting data from a scanned bit-mapped data strip. 5,083,214, Cl. 358-403.000.

Knowles Electronics, Inc.: *See*—
Madaffari, Peter L., 5,083,095, Cl. 330-277.000.

Knowles, John R. Post holder and marker therefor. 5,082,231, Cl. 248-545.000.

Knudsen, Bruce A.: *See*—
Rumaner, Lee E.; Benz, Mark G.; and Knudsen, Bruce A., 5,082,164, Cl. 228-176.000.

Ko, Jung-Wan; and Patel, Chandrakant B., to SamSung Electronics Co., Ltd. Apparatus for restoring the correct phase relation of the chroma and luminance signals passed through separate paths. 5,083,197, Cl. 358-19.000.

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Kobayashi, Hitoshi, to Nippon Precision Circuits Ltd. Semiconductor device and method for producing the same. 5,083,183, Cl. 357-51.000.

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Koga, Minoru; Watanabe, Takenori; Kamata, Toshio; Morishima, Satoshi; Mizusawa, Minoru; and Kobayashi, Kazunori, 5,082,752, Cl. 429-20.000.

Kobayashi, Shozo: *See*—
Matoba, Hirotsugu; Maeda, Shigemi; Ohta, Kenji; and Kobayashi, Shozo, 5,083,301, Cl. 369-32.000.

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Aizawa, Junichi; Omata, Yasushi; Shimoyama, Tatsuo; and Kodama, Kakuichi, 5,082,296, Cl. 277-204.000.

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Horiuti, Masao; Kodama, Shunichi; and Kuroda, Kenji, 5,083,222, Cl. 359-350.000.

Koelmel, Donald F.: *See*—
Shalaby, Shalaby W.; Koelmel, Donald F.; and Arnold, Steven, 5,082,925, Cl. 528-354.000.

Koentopp, William A.: *See*—
Lenmark, Voigt O., Sr.; and Koentopp, William A., 5,082,631, Cl. 422-102.000.

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Stockwell, David M.; Koermer, Gerald S.; and Jaglowski, William M., 5,082,814, Cl. 502-68.000.

Koga, Minoru; Watanabe, Takenori; Kamata, Toshio; Morishima, Satoshi; Mizusawa, Minoru; and Kobayashi, Kazunori, to Ishikawajima-Harima Heavy Industries Co., Ltd. Power generation system using molten carbonate fuel cell. 5,082,752, Cl. 429-20.000.

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DeVries, Kevin B., 5,082,387, Cl. 403-146.000.

Kohler, Norbert; and Zaitoun, Alain, to Institut Francais du Petrole. Method and composition for selectively reducing permeability to water in hydrocarbon reservoirs which are hot and saline. 5,082,577, Cl. 252-8.551.

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Yoshida, Nobuo; and Koide, Kazuo, 5,083,181, Cl. 357-45.000.

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Koito Manufacturing Co., Ltd.: *See*—
Shirai, Katutada; Mochizuki, Hideharu; Ohtuska, Yasushi; and Miyazawa, Kenji, 5,083,244, Cl. 362-61.000.

Koiwai, Masahiro: *See*—
Sawada, Shigeru; Maruyama, Mitsuaki; Sawada, Kenji; Nakagawa, Hitoshi; Tsujimoto, Jun; Kasai, Shinichi; Takeshita, Masahiko; Kaneta, Satoshi; Koiwai, Masahiro; and Niki, Hiroshi, 5,083,170, Cl. 355-319.000.

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Matsumoto, Kazuji; Uchimura, Mitsuo; Shiozaki, Tsugio; Koizumi, Osamu; Sugiura, Ikuzo; and Sugimoto, Yoshihiko, 5,082,273, Cl. 271-215.000.

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Kanda, Minoru; Komatsu, Mikio; Nunoya, Hidetsugu; Fujii, Yasuhiro; and Abiko, Toshio, 5,083,132, Cl. 343-700.0MS.

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Tagaya, Nobuaki; Kuwahara, Hideyuki; Hashimoto, Takao; Komatsu, Noriko; Fukamachi, Keiko; Maeshima, Tsugio; Ishikawa, Toshihiro; and Ogawa, Tetsuro, 5,082,566, Cl. 210-656.000.

Komatsu, Takuichi: *See*—
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Komatsu, Yoshihiro; Yoshii, Youji; and Murakami, Daisuke, to Sony Corporation. Analog-to-digital converter. 5,083,126, Cl. 341-156.000.

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Nagasaki, Tatsuo; and Komiya, Yasuhiro, 5,083,150, Cl. 354-402.000.

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Nakashima, Yasuhiro; Kondo, Norio; and Morikawa, Satoshi, 5,083,114, Cl. 340-601.000.

Kondo, Shigekazu: *See*—
Wakatsuki, Yuji; Kondo, Shigekazu; Takaoka, Mitsuyuki; Hirosawa, Masaru; and Suzuki, Nobuya, 5,081,850, Cl. 62-405.000.

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Kikuhara, Takashi; Shitamura, Osamu; and Kondo, Yasuo, 5,081,760, Cl. 29-130.000.
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Karolek, Neil C.; Inkmann, Mark S.; Johnson, Richard T.; Kondrakiewicz, Jerome A.; Lenhardt, Brett M.; and Saari, David W., 5,082,075, Cl. 180-68.200.

Kone Oy: *See*—
Rintala, Kari; Paarma, Jyrki; Sissala, Mikko; Valkonen, Ilkka; and Kokko, Pekka, 5,082,118, Cl. 209-599.000.

Konica Corporation: *See*—
Komatsu, Katsuaki; and Watanabe, Hideo, 5,083,171, Cl. 357-15.000.
Nishijima, Toyoki; Tanji, Masaki; Mizukura, Noboru; and Sugita, Shuichi, 5,082,766, Cl. 430-551.000.
Onodera, Kaoru; Ohbayashi, Keiji; Okumura, Mitsuhiro; and Chino, Shigeo, 5,082,765, Cl. 430-377.000.

Konig, Klaus: *See*—
Muller, Klaus-Helmut; Findeisen, Kurt; Haug, Michael; Heinemann, Ulrich; Kluth, Joachim; Konig, Klaus; Santel, Hans-Joachim; Lurssen, Klaus; and Schmidt, Robert R., 5,082,490, Cl. 71-92.000.

Konishi, Keiichi: *See*—
Isozumi, Shuzou; and Konishi, Keiichi, 5,081,875, Cl. 74-7.00R.

Konishi, Ryoji; Oji, Akihito; Kawaji, Toshikuni; Makaya, Osami; Ishihara, Manabu; and Iwasa, Akira, to Teikoku Seiyaky Co., Ltd.; and SS Pharmaceutical Co., Ltd. External adhesive preparation containing steroids. 5,082,663, Cl. 424-445.000.

Konno, Toyohiko: *See*—
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Kohari, Katsuo; Kono, Shinichi; and Fukukura, Masaaki, 5,083,066, Cl. 318-41.000.

Konrad, Adalbert: *See*—
Choi, Tak-Ming; Konrad, Adalbert; Kim, Bang M.; and Carroll, James J., Sr., 5,082,436, Cl. 425-174.80R.

Korea Heavy Industries & Construction Co., Ltd.: *See*—
Chang, Yun S.; and Kim, Dong J., 5,082,694, Cl. 427-239.000.

Korinek, Karl A.: *See*—
Farina, Samuel T.; and Korinek, Karl A., 5,082,511, Cl. 148-257.000.

Kosaka, Tokihiro, to TOA Medical Electronics Co., Ltd. Automatic focal-point adjustment method in flow imaging cytometer. 5,083,014, Cl. 250-201.700.

Koseki, Akihiko: *See*—
Koseki, Tadao; Koseki, Akihiko; Hirata, Kohichi; and Itoh, Haruhiko, 5,082,484, Cl. 65-144.000.

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Kobayashi, Yasuhiko; Koseki, Hiroyuki; and Kawame, Yumi, 5,082,042, Cl. 152-535.000.

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Koshimoto, Hideo: *See*—
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Koshin, Hiroaki: *See*—
Soushin, Koji; Koshin, Hiroaki; Okamoto, Shinichi; and Ohashi, Toshiharu, 5,083,067, Cl. 318-254.000.

Kostusiak, Karl H.; and Dipoala, William S., to Detection Systems, Inc. Intruder detection system with programmable countdown timer for self-supervision. 5,083,106, Cl. 340-506.000.

Kotabe, Hiroaki, to Ricoh Company, Ltd. Sequence controller. 5,083,142, Cl. 346-134.000.

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Narumiya, Hisayoshi, 5,082,374, Cl. 384-45.000.

Kramer, Steven G., to Medcor, Inc. Snap-lock for screw-cap container. 5,082,129, Cl. 215-221.000.

Kramer, Steven J.: *See*—
Schooley, David A.; Kataoka, Hiroshi; and Kramer, Steven J., 5,082,828, Cl. 514-12.000.

Kranz, Joachim: *See*—
Kurtz, Walter; Muench, Karl; Kranz, Joachim; and Belde, Horst, 5,082,498, Cl. 106-499.000.

Krasner, Donald H.: *See*—
Kasakevich, Mark L.; Krasner, Donald H.; Secrist, Jerry W.; and Meuhlner, Roland O., 5,082,613, Cl. 264-178.00R.

Kraus, Helmut: *See*—
Blank, Heinz U.; and Kraus, Helmut, 5,082,976, Cl. 568-431.000.

Krause, Gunther, to Krause-Werk GmbH & Co. KG. Cross member construction for use at the foot of ladders. 5,082,088, Cl. 182-204.000.

Krause-Werk GmbH & Co. KG: *See*—
Krause, Gunther, 5,082,088, Cl. 182-204.000.

Kreitner, Ludwig; Grau, Werner; Lehner, August; Reichert, Hans; Sommermann, Friedrich; Schneider, Norbert; and Erhardt, Gerd, to Basf Aktiengesellschaft. Production of magnetic recording media. 5,082,689, Cl. 427-128.000.

Kren, George: *See*—
Pecen, Jiri; Gross, Kenneth P.; Leslie, Brian; and Kren, George, 5,083,035, Cl. 250-561.000.

Krieg, Wolfgang: *See*—
Kardorff, Uwe; Neubauer, Hans-Juergen; Leyendecker, Joachim; Kuenast, Christoph; Hofmeister, Peter; and Krieg, Wolfgang, 5,082,852, Cl. 514-351.000.

Krier, Martin; and Liebel, Henry L., to Shippers Paper Products Company. Cargo air bag inflation valve and inflator combination. 5,082,244, Cl. 251-149.600.

Kroeger, Edward: *See*—
Rohde, Larry A.; Hall, Mark R.; Kroeger, Edward; and Sutherland, Joyce E., 5,082,373, Cl. 374-155.000.

Kroger, Gerard P.: *See*—
Husain, Sifarat S.; Kroger, Gerard P.; and Czachor, Robert P., 5,082,424, Cl. 416-158.000.

Kroll, Arthur S.: *See*—
Hill, Lawrence A.; Jacobs, Michael E.; Kroll, Arthur S.; and Williams, Ralph E., 5,083,166, Cl. 355-260.000.

Kroll, Joachim: *See*—
Franzen, Hermann; Kollner, Walter; Klessinger, Dieter; and Kroll, Joachim, 5,082,128, Cl. 212-266.000.

Krones AG Hermann Kronseder Maschinenfabrik: *See*—
Weiss, Wilhelm, 5,082,033, Cl. 141-39.000.

Kruck, Richard W.: *See*—
Cur, Nihat O.; Kruck, Richard W.; White, William S.; and Kirby, David B., 5,082,335, Cl. 312-401.000.

Krueger, James W.: *See*—
Ross, Jeffrey L.; and Krueger, James W., 5,082,103, Cl. 198-460.000.

Kruse, Heinz-Josef: *See*—
Frye, Gunter; Karius, Klaus-Dietmar; Kruse, Heinz-Josef; Sippel, Achim; Meyer, Jurgen; and Primus, Michael, 5,081,931, Cl. 102-489.000.

Kruse, Jurgen: *See*—
Frye, Andreas; Kruse, Jurgen; Weyand, Julius; Bettermann, Joachim; and Bringmann, Dirk, 5,083,127, Cl. 342-1.000.

KSB Aktiengesellschaft: *See*—
Reil, Axel; Scherer, Rolf; Starke, Jorg; Ghiotte, Renzo; and Lovisetto, Primo, 5,082,425, Cl. 416-188.000.

Kub, Francis J., to United States of America, Navy. Floating gate magnetic field sensor. 5,083,174, Cl. 357-27.000.

Kubler, Freidrich: *See*—
Kubler, Helmut; and Kubler, Freidrich, 5,083,078, Cl. 323-268.000.

Kubler, Helmut; and Kubler, Freidrich, to Daimler-Benz AG. Device for supplying power to an electronic computer in a motor vehicle. 5,083,078, Cl. 323-268.000.

Kubo, Ken-ichi; and Li, Xin-he, to Diesel Kiki Co., Ltd. Electromagnetic valve and unit fuel injector with electromagnetic valve. 5,082,180, Cl. 239-88.000.

Kubo, Takami: *See*—
Matsui, Naoki; Iwato, Shuichi; Kaneto, Shuji; Kubo, Takami; Yamazaki, Masayuki; and Moriyama, Shigeru, 5,081,857, Cl. 72-6.000.

Kubo, Takayuki: *See*—
Kitahara, Mikio; Machida, Koichi; Kubo, Takayuki; Torikai, Motoyuki; and Asahina, Koutarou, 5,082,880, Cl. 523-466.000.

Kubota Ltd.: *See*—
Morichika, Toshiaki; Tani, Toshio; Sakai, Chiaki; Koshimoto, Hideo; and Kadowaki, Tatsuhiko, 5,082,750, Cl. 428-694.000.

Kubota, Teruji: *See*—
Ishida, Takashi; Ueda, Yoshikazu; Kubota, Teruji; Igarashi, Misao; Tanaka, Norichika; and Kamijo, Yasuhiko, 5,081,937, Cl. 110-246.000.

Kubota, Tohru: *See*—
Ishihara, Toshinobu; Kubota, Tohru; Endo, Mikio; and Oikawa, Katsuyuki, 5,082,960, Cl. 556-444.000.

Kuboyama, Hisaharu: *See*—
Komiyama, Tadashi; Kuboyama, Hisaharu; Jimbo, Takashi; Watanabe, Hiroyoshi; Tokumoto, Shuichi; Endoh, Yumiko; Sugiyama, Eiichi; and Naganuma, Yoshitaro, 5,082,972, Cl. 564-480.000.

Kudo, Hideo, to Shin-Etsu Handotai Company, Ltd. Automatic cleaning apparatus for disks. 5,081,733, Cl. 15-77.000.

Kudo, Shigeji: *See*—
Suzuki, Yoshitsugu; Iizuka, Shougo; Kajiyama, Shigeo; Suzuki, Sanae; and Kudo, Shigeji, 5,082,253, Cl. 269-45.000.

Kudo, Yoshinobu; and Hata, Yoshiaki, to Minolta Camera Kabushiki Kaisha. Camera. 5,083,149, Cl. 354-402.000.

Kuenast, Christoph: *See*—
Kardorff, Uwe; Neubauer, Hans-Juergen; Leyendecker, Joachim; Kuenast, Christoph; Hofmeister, Peter; and Krieg, Wolfgang, 5,082,852, Cl. 514-351.000.

Kuga, Tetsuro; Sekine, Susumu; and Itoh, Seiga, to Kyowa Hakko Kogyo Co., Ltd. Method of producing an adult T cell leukemia virus fused antigen polypeptide. 5,082,776, Cl. 435-69.700.

Kugiya, Fumio: *See*—
Shiiki, Kazuo; Shiroishi, Yoshihiro; Ohta, Norio; Tsuyoshi, Toshiaki; Takano, Hisashi; and Kugiya, Fumio, 5,083,226, Cl. 360-77.050.

Kuhling, Franz; Grimm, Rolf; and Riesselmann, Gottfried. Support element, clamp element and stop element for the preparation and/or implementation of a cooking process of pieces of meat, especially poultry. 5,081,916, Cl. 99-419.000.

Kuhlmann, Josef. Apparatus for transporting and trimming mushrooms. 5,081,920, Cl. 99-639.000.

Kuhlmann, Walter: *See*—
Grube, Erwin; Kuhlmann, Walter; and Elges, Friedhelm, 5,082,107, Cl. 198-680.000.

Kuhn, Othmar, to Inotech AG. Apparatus for and method of measuring electrons. 5,083,027, Cl. 250-374.000.

Kuhnert, Reinhold: *See*—
Tuerkes, Peter; and Kuhnert, Reinhold, 5,083,177, Cl. 357-38.000.

Kuisma, Heikki: *See*—
Lehto, Ari; Lahdenpera, Juha; and Kuisma, Heikki, 5,083,234, Cl. 361-283.000.

Kulicke and Soffa Industries, Inc.: *See*—
Rzeznik, Josef; and Foran, Raymond E., 5,083,192, Cl. 357-74.000.

Kulla, Hans: *See*—
Lehky, Pavel; Kulla, Hans; and Mischler, Stephane, 5,082,777, Cl. 435-122.000.

Kumaki, Yoshinari: *See*—
Syobatake, Yasuro; and Kumaki, Yoshinari, 5,083,269, Cl. 395-425.000.

Kumamoto, Hidechika, to Mita Industrial Co., Ltd. Shadow-added image formation device. 5,083,217, Cl. 358-452.000.

Kumano, Shinji: *See*—
Hiyoshi, Teruo; Suzuki, Hideo; Aoki, Eiichiro; Nakada, Akira; Kumano, Shinji; Watanabe, Kunihiko; and Sakama, Masao, 5,081,896, Cl. 84-600.000.

Kume, Masaharu: *See*—
Saitou, Toshihiko; Yamashita, Takashi; Ishii, Kenichi; Ogawa, Masanobu; Shibata, Shinya; Oda, Kenji; and Kume, Masaharu, 5,083,134, Cl. 343-713.000.

Kunz, Stefan: *See*—
Koch, Peter; Kahnau, Guenter; Glaser, Peter; Habbel, Georg; Kunz, Stefan; and Schmatelka, Bernhard, 5,082,175, Cl. 237-12.30C.
Kuo, Wen T.: *See*—
Clark, Charles A., Jr.; Kuo, Wen T.; and Wu, Hyon O., 5,083,003, Cl. 219-110.000.
Kuramitsu, Mikihiro; Kabasawa, Junichi; and Watanabe, Nobuhisa, to Yoshida Industry Co., Ltd. Transferring and molding apparatus. 5,082,435, Cl. 425-117.000.
Kuraray Co., Ltd.: *See*—
Itamura, Sumio; and Moritani, Tohei, 5,082,743, Cl. 428-520.000.
Kurihara, Ryoichi: *See*—
Hara, Kouji; and Kurihara, Ryoichi, 5,083,296, Cl. 365-230.020.
Kurita, Sinichi: *See*—
Miura, Masato; Shimura, Tatsuo; Kariya, Tadaaki; Kawauchi, Norihiro; and Kurita, Sinichi, 5,083,180, Cl. 357-43.000.
Kurita Water Industries Ltd.: *See*—
Sugi, Hideo; Takahashi, Ryoichi; and Tahara, Kenji, 5,082,654, Cl. 514-617.000.
Kuriyama, Shigeru: *See*—
Fukushima, Masao; Murakami, Kei; Kuriyama, Shigeru; Nakamura, Yozo; Maeda, Yuji; Nakamura, Kenichi; Mashino, Keiichi; and Kadomukai, Yuzo, 5,083,038, Cl. 290-40.00A.
Kuroda, Kenji; and Sasaki, Koki, to Anritsu Corporation. Optical calorimeter system for executing real and short time calorimetric measurement of the optical power. 5,083,289, Cl. 364-557.000.
Kuroda, Kenji: *See*—
Horiuti, Masao; Kodama, Shunichi; and Kuroda, Kenji, 5,083,222, Cl. 359-350.000.
Kuroda, Michio: *See*—
Ishibashi, Yoji; Ohmori, Takashi; Kato, Fumio; Kuroda, Michio; and Iizuka, Nobuyuki, 5,081,843, Cl. 60-733.000.
Kuroda, Takashi; Yamada, Kazuhiro; Ishibashi, Tadao; Hayashida, Suetou; Kimura, Kyoichiro; and Sameshima, Masaru, to Chisso Corporation; and Maruzen Petrochemical Co., Ltd. Opacified molded product. 5,082,900, Cl. 525-211.000.
Kurokawa, Toshikazu; Tanaka, Fusatoshi; Matsuura, Kouji; and Aoki, Motoi, to Mazda Motor Corporation. Fuel intake system for V-type combustion engine. 5,081,962, Cl. 123-52.0MV.
Kurtz, Helen Lou: *See*—
Renk, Richard J.; Boller, George E.; and Ebert, Richard M., 5,082,089, Cl. 184-64.000.
Kurtz, Walter; Muench, Karl; Kranz, Joachim; and Belde, Horst, to BASF Aktiengesellschaft. Highly concentrated solid pigment formulations. 5,082,498, Cl. 106-499.000.
Kurz, Fredrik W. A. Method of preparing building materials. 5,082,501, Cl. 106-789.000.
Kusaba, Kazunori: *See*—
Utunomiya, Jiro; Iida, Saburo; Sibuya, Hitosi; Kusaba, Kazunori; and Narumi, Isao, 5,081,764, Cl. 29-843.000.
Kusaka, Kensaku; Suzuki, Yoshihiko; Kimura, Shigeo; Hosoi, Atsushi; Adachi, Hiroyuki; and Kinoshita, Masahide, to Canon Kabushiki Kaisha. Fixing device and fixing heater for use in the same. 5,083,168, Cl. 355-285.000.
Kushibiki, Nobuo: *See*—
Tabata, Masayoshi; Kushibiki, Nobuo; and Yoshinaga, Yoko, 5,082,358, Cl. 359-642.000.
Kutschenreuter, Paul H., Jr.; and Vishnauski, Jon M., to General Electric Company. Hypersonic flight vehicle. 5,082,206, Cl. 244-53.00B.
Kuwahara, Hideyuki: *See*—
Tagaya, Nobuaki; Kuwahara, Hideyuki; Hashimoto, Takao; Komatsu, Noriko; Fukamachi, Keiko; Maeshima, Tsugio; Ishikawa, Toshihiro; and Ogawa, Tetsuro, 5,082,566, Cl. 210-656.000.
Kuwano, Yukimitsu, to Sumitomo Heavy Industries Foundry & Forging Co., Ltd. Composite excavating tooth. 5,081,774, Cl. 137-142.00R.
Kuzmick, Kenneth F.; Kuzmick, Robert A.; and Davis, William J. Remote identification and speed determination system. 5,082,365, Cl. 356-28.000.
Kuzmick, Kenneth M.: *See*—
Corbitt, John D., Jr.; Kuzmick, Kenneth M.; O'Hearn, Stephanie L.; and Santilli, Albert N., 5,082,111, Cl. 206-363.000.
Kuzmick, Robert A.: *See*—
Kuzmick, Kenneth F.; Kuzmick, Robert A.; and Davis, William J., 5,082,365, Cl. 356-28.000.
Kwak, Yoon T.: *See*—
Tazi, Mohammed; Login, Robert B.; and Kwak, Yoon T., 5,082,913, Cl. 526-272.000.
Kyocera Corporation: *See*—
Hayashi, Katsura, 5,082,809, Cl. 501-105.000.
Oono, Michio; and Nagata, Meiro, 5,082,478, Cl. 55-466.000.
Kyosan Denki Kabushiki Kaisha: *See*—
Nakamura, Hideyo, 5,082,016, Cl. 137-202.000.
Kyowa Hakko Kogyo Co., Ltd.: *See*—
Kuga, Tetsuro; Sekine, Susumu; and Itoh, Seiga, 5,082,776, Cl. 435-69.700.
Kyowa Hakko Kogyo Kabushiki Kaisha: *See*—
Nakano, Hirofumi; Hara, Mitsunobu; Uosaki, Yohichi; Kawamoto, Isao; Takahashi, Keiiechi; and Gomi, Katsushige, 5,082,857, Cl. 514-453.000.
Kyrtsos, Christos T.; and Worrell, Dean A., to Caterpillar Inc. Method and apparatus for monitoring payload. 5,082,071, Cl. 177-25.140.
L & C Steinmuller GmbH: *See*—
Thomas, Gerhard; and Thielen, Walter, 5,082,477, Cl. 55-443.000.
Laboratoires Beaufour: *See*—
Rene, Michel; and Plantefeve, Jean-Claude, 5,082,666, Cl. 424-467.000.
Laboratories Eurobio: *See*—
Mahuzier, Georges; Chalom, Joseph; Farinotti, Robert; and Tod, Michel, 5,082,942, Cl. 546-66.000.
LaCava, Alberto I.: *See*—
Shirley, Arthur I.; and LaCava, Alberto I., 5,082,474, Cl. 55-26.000.
Lafis Lagertechnik Fischer GmbH & Co KG: *See*—
Fischer, Horst, 5,082,074, Cl. 180-11.000.
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Lehto, Ari; Lahdenpera, Juha; and Kuisma, Heikki, 5,083,234, Cl. 361-283.000.
Lai, Shih-Wang. Symmetrically-actuated adjustable leg assembly. 5,082,221, Cl. 248-168.000.
L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Darredeau, Bernard, 5,082,482, Cl. 62-24.000.
Degrigny, Patrick, 5,083,005, Cl. 219-121.520.
Rotman, Frederic; Rancon, Yannick; Queille, Philippe; and Olivier, Michel, 5,082,606, Cl. 264-40.600.
Lajoie, Michael S.: *See*—
Kirschner, Lawrence; Lajoie, Michael S.; and Spears, William E., Jr., 5,081,799, Cl. 51-410.000.
Lam, Kin S.: *See*—
Schroeder, Daniel R.; Lam, Kin S.; Hesler, Grace A.; Gustavson, Donald R.; Tomita, Koji; and Berry, Ronald L., 5,082,933, Cl. 536-16.800.
LaMantia, Philip J.; Hardick, George; and Campbell, Ralph, to Enamel Products & Plating Company. Method of creating a registered pattern on a metal coil and associated apparatus. 5,081,923, Cl. 101-32.000.
Lamarre, Daniel: *See*—
Hachey, Raynald; Lamarre, Daniel; and Marcotte, Jacques, 5,081,869, Cl. 73-25.030.
Lamb, Rocky D. Sporting goods rack. 5,082,123, Cl. 211-87.000.
Lamb, Steve; and Halpern, Alan A., to Orthopedic Systems, Inc. Apparatus for determining interskeletal distances. 5,082,003, Cl. 128-782.000.
Lambert, Derek, to Fry's Metals Ltd. Casting apparatus and method. 5,082,045, Cl. 164-113.000.
Lambert, Jesse A. Helmet mounted aviation night vision illuminating device. 5,083,246, Cl. 362-62.000.
Laminar Fluid Controls, Inc.: *See*—
Feild, Eugene P., 5,082,239, Cl. 251-120.000.
Lammerts, Judocus A. M.; Ritzerfeld, Willem G. J.; and Tooher, Michael J., to U.S. Philips Corp. Integrated memory circuit with interconnected sense amplifiers. 5,083,295, Cl. 365-205.000.
Lampert, N. R.: *See*—
Cammons, Ray R.; Carlisle, A. Wallace; and Lampert, N. R., 5,082,345, Cl. 385-60.000.
Lamson, Michael A.; and Edwards, Darvin R., to Texas Instruments Incorporated. Integrated circuit device having bumped power supply buses over active surface areas and method of manufacture thereof. 5,083,187, Cl. 357-71.000.
Lan, Shirley S. Connector. 5,082,456, Cl. 439-504.000.
Landa, Benzion, to Spectrum Sciences B.V. Liquid toner replenishment system. 5,083,165, Cl. 355-256.000.
Landau, Simcha. Floral bottle device. 5,082,699, Cl. 428-23.000.
Landoll Corporation: *See*—
Landoll, Donald R.; Harlan, Robert D.; and Carroll, Wayne L., 5,082,064, Cl. 172-178.000.
Landoll, Donald R.; Harlan, Robert D.; and Carroll, Wayne L., to Landoll Corporation. Tillage implement having depth adjustable discs. 5,082,064, Cl. 172-178.000.
Landon, Hank A. Spool valve and piston power plant. 5,081,840, Cl. 60-500.000.
Lane, William H.: *See*—
Hammons, James L.; and Lane, William H., 5,082,037, Cl. 144-286.00A.
Langen, Manfred; Gebald, Gregor; Inger, Siegfried; and Schroeders, Manfred, to Palitex Project Company GmbH. Apparatus for delivering individual packages or groups thereof to a package transport system. 5,082,192, Cl. 242-18.00R.
Langer, Matthew E.; Khorshahi, Ferial; Aronson, Michael P.; and Hessel, John F., to Lever Brothers Company, Division of Conopco, Inc. Fabric care compositions containing a polymeric fluorescent whitening agent. 5,082,578, Cl. 252-8.700.
Langlois, Bernard: *See*—
Wakselman, Claude; Tordeux, Marc; Langlois, Bernard; Clavel, Jean-Louis; and Nantermet, Roland, 5,082,945, Cl. 548-110.000.
Langsjoen, Per H.: *See*—
Folkers, Karl A.; and Langsjoen, Per H., 5,082,650, Cl. 424-10.000.
Lanxide Technology Company, LP: *See*—
Dwivedi, Ratnesh K., 5,082,700, Cl. 428-34.400.
Gesing, Adam J.; Luce, Edward S.; Raghavan, Narashima S.; and White, Danny R., 5,082,807, Cl. 501-93.000.
LaPierre, Donald. High pressure filter supports for liquids, systems therewith and methods of use. 5,082,561, Cl. 210-232.000.
Lapp, Steven P.; and Timan, Peter E., to UTDC Inc. LCTS chassis configuration with articulated chassis sections between vehicles. 5,081,933, Cl. 105-3.000.

Lasch, James E.; Kaczmarczik, James M.; and Klein, James A., to Minnesota Mining and Manufacturing Company. Conformable polymeric marking sheet. 5,082,715, Cl. 428-143.000.

Laser, Jurgen: *See*—
Thijssen, Stan; and Laser, Jurgen, 5,082,727, Cl. 428-328.000.

Laser Technology, Inc.: *See*—
Tyson, John, II; and Newman, John W., 5,082,366, Cl. 356-35.500.

Laskaris, Evangelos T.: *See*—
Herd, Kenneth G.; Laskaris, Evangelos T.; and Vermilyea, Mark E., 5,083,105, Cl. 335-216.000.

Lassiaz, Philippe: *See*—
Gay, Christian; and Lassiaz, Philippe, 5,082,098, Cl. 192-89.00B.

Lassiter, Will M. Crankless internal combustion engine. 5,081,964, Cl. 123-197.400.

Latone, Jack T.: *See*—
Reilly, Paul E.; Fleysher, Daniel; Rulli, Paul A.; and Latone, Jack T., 5,083,210, Cl. 358-298.000.

Launspach, Dick: *See*—
Marchese, Tony; Houghton, Jim; Launspach, Dick; and Marchese, Domenic, 5,082,392, Cl. 404-25.000.

Laurent, Sebastian M.; and Sanders, Robert N., to Ethyl Corporation. Bone disorder treatment. 5,082,662, Cl. 424-442.000.

Lauterbach, Achim, to E-Z-Rect Manufacturing Ltd. Locking tab for hook-in type shelving. 5,082,388, Cl. 403-254.000.

Lauterbur, Paul C.: *See*—
Levin, David N.; Hu, Xiaoping; Lauterbur, Paul C.; and Spraggins, Thomas, 5,081,992, Cl. 128-653.200.

Lawassani, Abdolhossein R.: *See*—
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Hessel, John F.; Cardinali, Martin S.; and Aronson, Michael P., 5,082,585, Cl. 252-174.120.
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Lishness, Bryant L.; and Scirica, Paul A., to Colt's Manufacturing Company Inc. Firing pin positioning system. 5,081,780, Cl. 42-69.010.

Lissaman, Peter B. S.; Drees, Herman M.; Sink, Charles J.; and Watson, William D., to Aerovironment, Inc. Passively stable hovering system. 5,082,079, Cl. 180-118.000.

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Lo, Kun-Nan. Racket head with inner peripheral indentations. 5,082,266, Cl. 273-73.00D.

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Long, Alexander, III, to Electromotive, Inc. Ignition combustion pre-chamber for internal combustion engines with constant stoichiometric air-fuel mixture at ignition. 5,081,969, Cl. 123-274.000.

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Longobardi, Lawrence J. Sign with transparent substrate. 5,082,703, Cl. 428-38.000.

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Losch, Rolf; Orth, Winfried; Weiss, Wolfgang; and Kleffner, Hans W., to Rutgerswerke AG. Production of pyridine-3-sulfonic acid. 5,082,944, Cl. 546-294.000.

Loth, Myriam; Blanvalet, Claude; and Valange, Baudouin, to Colgate-Palmolive Company. Microemulsion all purpose liquid cleaning composition. 5,082,584, Cl. 252-122.000.

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MacIntyre, Douglas A.: *See—*
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Mackay, Carol Ann: *See—*
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MacKay, Fenton. Universal sulky hitch. 5,081,826, Cl. 54-2.000.

MacKenzie, John A. Solar window air heater. 5,081,982, Cl. 126-429.000.

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Maeda, Kazuya: *See—*
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Maeda, Shigemi: *See—*
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Maekawa, Masao: *See—*
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Mahan, Larry G. Universal bracket. 5,082,226, Cl. 248-265.000.

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Mahle GmbH: *See—*
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Makaya, Osami: *See—*
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Malta, Alain D.: *See—*
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MAN Roland Druckmaschinen AG: *See—*
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Tackett, James E., Jr., 5,082,056, Cl. 166-295.000.

Marcadis, Stuart J.: *See—*
DeVries, James H.; DeVries, Michael R.; Sidor, William E., Jr.; DeVries, Ronald A.; and Marcadis, Stuart J., 5,082,025, Cl. 137-863.000.

Marceau, Daniel, to Van den Bergh Foods Co., Division of Conopco, Inc. Apparatus for transporting and separating objects. 5,082,104, Cl. 198-419.300.

Marchese, Domenic: *See—*
Marchese, Tony; Houghton, Jim; Launspach, Dick; and Marchese, Domenic, 5,082,392, Cl. 404-25.000.

Marchese, Tony; Houghton, Jim; Launspach, Dick; and Marchese, Domenic. Manhole cover lock with spring biased locking bars. 5,082,392, Cl. 404-25.000.

Marchetto, Antonio; Mascheroni, Anghelito; and Ruffo, Georges, to Rhone-Poulenc Chimie. Surface active agent based on polyoxyalkylenated (1-phenyl ethyl) phenols, the process for preparation thereof and the use thereof for producing emulsifiable concentrated solutions of active materials. 5,082,591, Cl. 252-351.000.

Marchionni, Giuseppe: *See—*
Bargigia, Gianangelo; Caporiccio, Gerardo; Tonelli, Claudio; Flabbi, Luciano; and Marchionni, Giuseppe, 5,083,082, Cl. 324-158.00F.

Marcotte, Jacques: *See—*
Hachey, Raynald; Lamarre, Daniel; and Marcotte, Jacques, 5,081,869, Cl. 73-25.030.

Maresh, Anthony J.; and Moore, Craig A., to Xycom, Inc. Computer bus interconnection device. 5,083,259, Cl. 395-325.000.

Margolis, Geoffrey. Fat removal from meat patties. 5,082,678, Cl. 426-281.000.

Marhold, Albrecht, to Bayer Aktiengesellschaft. Trifluoromethylaminobenzenes containing fluorine and/or chlorine and their preparation. 5,082,971, Cl. 564-442.000.

Marinkovich, Vincent A.: *See—*
Burd, John F.; Dyminski, John W.; and Marinkovich, Vincent A., 5,082,768, Cl. 435-7.920.

Marker Deutschland GmbH: *See—*
Mickiewicz, Josef, 5,082,407, Cl. 411-107.000.

Marrache, Albert: *See—*
Eli, Nissim; and Marrache, Albert, 5,082,560, Cl. 210-206.000.

Mars, Suzanne P. Knock-down chair. 5,082,329, Cl. 297-442.000.

Marshall, Arthur J., to Carrier Corporation. Slide valve position indicator and magnetic coupler. 5,081,876, Cl. 74-89.210.

Marshall, Wayne E.: *See—*
Hamada, Jamel S.; and Marshall, Wayne E., 5,082,672, Cl. 426-7.000.

Marshall and Williams Company: *See—*
Pettigrew, Thomas G., 5,081,751, Cl. 26-91.000.

Martella, David J.; and Jaruzelski, John J., to Exxon Chemical Patents Inc. Alkyl phenol-formaldehyde condensates as fuel additives. 5,082,470, Cl. 44-304.000.

Martens, Andre J.: *See—*
Crouzet, Pierre G.; and Martens, Andre J., 5,082,985, Cl. 585-501.000.

Martens, Uwe: *See—*
Voss, Hartwig; Kneifel, Klemens; and Martens, Uwe, 5,082,549, Cl. 204-301.000.

Martin Archery, Inc.: *See—*
Newbold, George T., 5,081,980, Cl. 124-44.500.

Martin, Charles R.; Rousser, Robert; and Brabec, Daniel L., to United States of America, Agriculture. Device for singulating particles. 5,082,141, Cl. 221-278.000.

Martin, Donald A.: *See—*
Jeram, Edward M.; Ward, Brian J.; and Martin, Donald A., 5,082,886, Cl. 524-403.000.

Martin, Eckhard; and Wiesse, Joachim, to J. M. Voith GmbH. Coating device. 5,081,950, Cl. 118-70.000.

Martin, Edward L.: *See—*
Schumacher, Kevin H.; Martin, Robert J.; and Martin, Edward L., 5,082,301, Cl. 280-38.000.

Martin, James P.: *See—*
Borton, Michael D.; Hubble, Fred F., III; Martin, James P.; Mattioli, Theresa K.; and Shoemaker, Ralph A., 5,083,161, Cl. 355-208.000.

Martin Marietta Corporation: *See—*
Williams, Laurence O., 5,081,930, Cl. 102-292.000.

Martin, Robert J.: *See—*
Schumacher, Kevin H.; Martin, Robert J.; and Martin, Edward L., 5,082,301, Cl. 280-38.000.

Maruyama, Mitsuaki: *See—*
Sawada, Shigeru; Maruyama, Mitsuaki; Sawada, Kenji; Nakagawa, Hitoshi; Tsujimoto, Jun; Kasai, Shinichi; Takeshita, Masahiko; Kaneta, Satoshi; Koiwai, Masahiro; and Niki, Hiroshi, 5,083,170, Cl. 355-319.000.

Maruzen Petrochemical Co., Ltd.: *See—*
Kuroda, Takashi; Yamada, Kazuhiro; Ishibashi, Tadao; Hayashida, Suetou; Kimura, Kyoichiro; and Sameshima, Masaru, 5,082,900, Cl. 525-211.000.

Masaki, Mitsuo: *See—*
Okabe, Susumu; Masaki, Mitsuo; Yamakawa, Tomio; Matsukura, Hitoshi; and Nomura, Yutaka, 5,082,943, Cl. 546-210.000.

Mascheroni, Anghelito: *See—*
Marchetto, Antonio; Mascheroni, Anghelito; and Ruffo, Georges, 5,082,591, Cl. 252-351.000.

Maschinenfabrik Rieter AG: *See—*
Siegenthaler, Marcel; and Gartenmann, Niklaus, 5,081,744, Cl. 19-159.00A.

Siegenthaler, Marcel, 5,081,745, Cl. 19-159.00R.
Wirz, Armin, 5,082,191, Cl. 242-1800.00A.

Mascia, Francesco: *See—*
Bonvini, Alberto; and Mascia, Francesco, 5,082,124, Cl. 211-153.000.

Mascia, Michael F. Palm protector. 5,081,715, Cl. 2-20.000.

Mashino, Keiichi: *See—*
Fukushima, Masao; Murakami, Kei; Kuriyama, Shigeru; Nakamura, Yozo; Maeda, Yuji; Nakamura, Kenichi; Mashino, Keiichi; and Kadomukai, Yuzo, 5,083,038, Cl. 290-40.00A.

Masland, Joel C.: *See—*
Coult, David G.; Masland, Joel C.; and Milbrodt, Michele A., 5,082,343, Cl. 385-34.000.

Massachusetts Institute of Technology: *See—*
Jamas, Spiros; Rha, ChoKyun; and Sinskey, Anthony J., 5,082,936, Cl. 536-123.000.

Massey, George W.: *See—*
Crocker, James F., 5,082,032, Cl. 141-1.000.

Massey, Michael J.; Hopper, David R.; and DeDecker, Mark N. Simplified apparatus for decontaminating electrical apparatus contaminated with PCBs. 5,082,012, Cl. 134-109.000.

Mast Immunosystems, Inc.: *See—*
Burd, John F.; Dyminski, John W.; and Marinkovich, Vincent A., 5,082,768, Cl. 435-7.920.

Masuda, Fumihiko, to Shin Nihon Machine Mfg. Co., Ltd. Apparatus for automatically producing confectionery cakes or the like. 5,081,917, Cl. 99-450.200.

Masumura, Masao: *See—*
Suzuki, Kohji; Masumura, Masao; Oyama, Hajime; and Namekata, Shinichi, 5,083,160, Cl. 355-208.000.

MASX Energy Services Group, Inc.: *See—*
Bailey, Thomas F.; and Campbell, John E., 5,082,020, Cl. 137-533.210.

Mate Punch & Die Co.: *See—*
Johnson, Gary E.; and Schneider, John T., 5,081,891, Cl. 83-140.000.

Matec Holding AG: *See—*
Thijssen, Stan; and Laser, Jurgen, 5,082,727, Cl. 428-328.000.

Material Control, Inc.: *See—*
Kerr, James F., 5,082,086, Cl. 182-17.000.

Matich, Charles B., to Boeing Company, The. System and method for controlling an aircraft flight control member. 5,082,208, Cl. 244-78.000.

Matoba, Hirotsugu; Maeda, Shigemi; Ohta, Kenji; and Kobayashi, Shozo, to Sharp Kabushiki Kaisha. Optical card recording and reproducing device. 5,083,301, Cl. 369-32.000.

Matsuda, Hideaki: *See—*
Tange, Yoshihiro; and Matsuda, Hideaki, 5,082,607, Cl. 264-44.000.
Tokizawa, Minoru; Asaoka, Takemitsu; Matsuda, Hideaki; and Katori, Tatsuhiko, 5,082,948, Cl. 548-342.000.

Matsui, Naoki; Iwato, Shuichi; Kaneto, Shuji; Kubo, Takami; Yamazaki, Masayuki; and Moriyama, Shigeru, to NKK Corporation. Cold rolling method using cleaning brushes for at least the back up rolls. 5,081,857, Cl. 72-6.000.

Matsuki, Toshiyuki: *See—*
Sasaki, Michiaki; Yamamoto, Kiyokazu; and Matsuki, Toshiyuki, 5,082,426, Cl. 417-198.000.

Matsukura, Hitoshi: *See—*
Okabe, Susumu; Masaki, Mitsuo; Yamakawa, Tomio; Matsukura, Hitoshi; and Nomura, Yutaka, 5,082,943, Cl. 546-210.000.

Matsumoto, Hidetoshi: *See—*
Nakanishi, Hiroaki; Fukumoto, Hidehiro; Shibata, Kuniharu; and Matsumoto, Hidetoshi, 5,082,363, Cl. 356-1.000.

Matsumoto, Hiroshi: *See—*
Iwaki, Takashi; Itou, Kazunori; Matsumoto, Hiroshi; Suzuki, Hiroyuki; Shibata, Juzo; and Uematsu, Nobuyuki, 5,082,048, Cl. 165-1.000.

Matsumoto, Kazuji; Uchimura, Mitsuo; Shiozaki, Tsugio; Koizumi, Osamu; Sugiura, Ikuzo; and Sugimoto, Yoshihiko, to Tokyo Electric Co., Ltd. Slip storing apparatus. 5,082,273, Cl. 271-215.000.

Matsumoto, Osamu: *See—*
Sumida, Mamoru; and Matsumoto, Osamu, 5,081,978, Cl. 123-588.000.

Matsuo, Hideshige; Yamamoto, Isamu; Itoh, Michio; Sato, Kuniaki; Nakamura, Yoshihiro; Tomita, Akia; and Mihara, Yoshiki, to Hitachi Metals, Ltd. Connector beam joining method. 5,082,166, Cl. 228-189.000.

Matsuoka, Hiroshi, to Isuzu Motors Limited. Heat-insulating engine with swirl chamber. 5,081,970, Cl. 123-275.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Kamiyama, Satoshi; and Ohnaka, Kiyoshi, 5,082,162, Cl. 228-123.000.
Nonomura, Kinzo; Kitao, Satoshi; Murai, Ryuichi; Hashiguchi, Jumpei; Hamada, Kiyoshi; and Takahashi, Masayuki, 5,083,058, Cl. 313-482.000.
Suzuki, Takashi; and Kai, Yoshiaki, 5,082,709, Cl. 428-64.000.
Tanaka, Kunio; Ohnishi, Youichi; and Yokoyama, Masahide, 5,082,545, Cl. 204-298.030.
Yamada, Takahiro; and Terakawa, Sumio, 5,083,173, Cl. 357-24.000.
Yamaguchi, Hideki; Nitta, Masahiro; and Furukawa, Katsunori, 5,082,999, Cl. 219-10.55B.

Matsushita Electric Works, Ltd.: *See—*
Kanda, Minoru; Komatsu, Mikio; Nunoya, Hidetsugu; Fujii, Yasuhiro; and Abiko, Toshio, 5,083,132, Cl. 343-700.0MS.
Soushin, Koji; Koshin, Hiroaki; Okamoto, Shinichi; and Ohashi, Toshiharu, 5,083,067, Cl. 318-254.000.

Matsushita Electronics Corporation: *See—*
Yamada, Takahiro; and Terakawa, Sumio, 5,083,173, Cl. 357-24.000.

Matsushita, Hiroomi; Maekawa, Masao; Hasegawa, Masaji; Yamaguchi, Tetsuo; and Niwa, Kunio, to Sumitomo Rubber Industries, Ltd. Reaction injection machine utilizing a plurality of reactant liquids. 5,082,437, Cl. 425-225.000.

Matsuura, Kouji: *See—*
Kurokawa, Toshikazu; Tanaka, Fusatoshi; Matsuura, Kouji; and Aoki, Motoi, 5,081,962, Cl. 123-52.0MV.

Matsuura, Mitsuyuki; and Fujita, Takashi, to Mitsubishi Petrochemical Company Limited. Production of αolefin polymers. 5,082,818, Cl. 502-119.000.

Matsuura, Takashi, to Fuji Jukogyo Kabushiki Kaisha. Knocking detection device for an automotive engine. 5,083,278, Cl. 364-431.080.

Matsuzawa, Soichiro: *See—*
Toyoda, Shuhei; Matsuzawa, Soichiro; and Ichinose, Masahiro, 5,083,221, Cl. 359-245.000.

Mattioli, Theresa K.: *See—*
Borton, Michael D.; Hubble, Fred F., III; Martin, James P.; Mattioli, Theresa K.; and Shoemaker, Ralph A., 5,083,161, Cl. 355-208.000.

Mauduit, Daniel A.: *See—*
Aubry, Jacques A.; and Mauduit, Daniel A., 5,082,314, Cl. 285-174.000.

Maulat, Olivier: *See—*
Devant, Gerard; and Maulat, Olivier, 5,083,021, Cl. 250-292.000.

Mauro, Gerald D. Wood clad window assembly and associated method. 5,081,793, Cl. 49-501.000.

Maxwell, Boyce A. Oil collecting and dispensing apparatus. 5,082,035, Cl. 141-98.000.

May, David E.; and Rose, Richard S., to Great Lakes Chemical Corporation. Flame retardant flexible polyurethane foam compositions. 5,082,867, Cl. 521-67.000.

May, Manfred: *See—*
Federhen, Bernd; and May, Manfred, 5,082,024, Cl. 137-860.000.

Mayer, Richard E., to Allied-Signal Inc. Solutions of ammonium sulfate, ammonium nitrate and urea, with high nitrogen and sulfur content, having low salt-out temperatures. 5,082,487, Cl. 71-30.000.

Mayes, John. Friction stay and adjustable friction slider. 5,081,743, Cl. 16-341.000.

Mayfield, George G.: *See—*
Yount, Thomas L.; Mayfield, George G.; and Agreda, Victor H., 5,082,982, Cl. 570-203.000.

Mayfield, Larry; Russo, Thomas; Klausner, Kenneth; and Shalotsky, Charles. Aerosol deodorant composition and packaged aerosol deodorant. 5,082,652, Cl. 424-47.000.

Mayo Foundation for Medical Education and Research: *See—*
Lu, Jian-yu; and Greenleaf, James F., 5,081,995, Cl. 128-662.030.

Mazada Motor Manufacturing U.S.A. Corp.: *See—*
Kato, Hideyuki, 5,083,073, Cl. 318-577.000.

Mazda Motor Corporation: *See—*
Chikamori, Takeshi; Ohkubo, Masaki; Kamisakamoto, Akira; Imai, Shoji; Tsubota, Shunichi; Uemura, Hideyuki; and Wakutani, Shinichi, 5,081,974, Cl. 123-478.000.
Kanazawa, Hirotaka; and Ohmura, Hiroshi, 5,082,080, Cl. 180-140.000.
Kurokawa, Toshikazu; Tanaka, Fusatoshi; Matsuura, Kouji; and Aoki, Motoi, 5,081,962, Cl. 123-52.0MV.
Minamitani, Kunitomo, 5,081,973, Cl. 123-339.000.
Tsuyama, Toshiaki; and Onaka, Toru, 5,082,081, Cl. 180-197.000.
Umeda, Takashi; Kanemitsu, Norihiro; Murakami, Kousuke; Takahara, Kuniaki; and Sakurai, Ushio, 5,082,078, Cl. 180-90.000.

McAllister, Jerome W.: *See—*
Piotrowski, Chester; Bruzzone, Charles L.; T050832716g-Long; and McAllister, Jerome W., 5,083,112, Cl. 340-572.000.

McAneney, T. Brian: *See—*
Sacripante, Guerino; McAneney, T. Brian; Drappel, Stephan; Van Kao, Sheau; and Alexandru, Lupu, 5,082,919, Cl. 528-176.000.

McArthur, Robert A.: *See—*
Daly, Paul D.; and McArthur, Robert A., 5,081,972, Cl. 123-337.000.

McBeth, James B.; and Fetchko, Eric, to Teleflex Incorporated. Hydraulic pump having floating spigot valve. 5,081,908, Cl. 91-499.000.

McCaman, Michael T.; and King, John F., to Berlex Laboratories, Inc. Efficient process for isolating insoluble heterologous protein using non-ionic detergents. 5,082,775, Cl. 435-69.700.

McCarthy, James B.: *See—*
Chelberg, Mary K.; Tsilibary, Photini-Effie C.; and McCarthy, James B., 5,082,926, Cl. 530-326.000.

McCourt, Daniel M. Water bed mattress cover and method of applying. 5,081,726, Cl. 5-451.000.

McCullough, Laughlin G.: *See—*
Monnier, John R.; Godleski, Stephen A.; Low, Howard M.; McCullough, Laughlin G.; McGarry, Lynda W.; and Phillips, Gerald W., 5,082,956, Cl. 549-507.000.

McDonald, Alexander C., to Betz Laboratories, Inc. Corrosion inhibitors for ferrous metals in aqueous solutions comprising a nonionic surfactant and an anionic oxygen containing group. 5,082,592, Cl. 252-389.400.

McDonald, William J. Wine cask restraining accessory. 5,082,145, Cl. 222-105.000.

McElroy, John W.; and Schaumberg, P. Leslie. Rotating source verification device. 5,083,109, Cl. 340-522.000.

McGarry, Lynda W.: *See—*
Monnier, John R.; Godleski, Stephen A.; Low, Howard M.; McCullough, Laughlin G.; McGarry, Lynda W.; and Phillips, Gerald W., 5,082,956, Cl. 549-507.000.

McGarvey, David C., to LRS, Inc. Fire resistant tank construction. 5,082,138, Cl. 220-444.000.

McGee, Edward: *See—*
Jackson, David A.; McGee, Edward; and Parker, David A., 5,082,675, Cl. 426-54.000.

McGhee, Charles M.: *See—*
Spurgeon, Gordon L.; McGhee, Charles M.; and Evans, Frank C., 5,082,017, Cl. 137-217.000.

McGregor, Donald B.; Davis, Michael W.; and Bernard, Russell J. Alignment tool for mounting door lock assembly. 5,081,771, Cl. 33-667.000.

McGuire, Kevin P., to Tailored Lighting Company, Inc. Apparatus for producing light distributions. 5,083,252, Cl. 362-293.000.

McKee, Clyde M. Horizontally and vertically movable remote controlled mirror unit for commercial vehicles. 5,082,361, Cl. 359-876.000.

McMaster University: *See—*
Poehlman, William F. S.; and Mesher, Darel E., 5,082,173, Cl. 236-11.000.

McWilliams, O. Dean, to Caterpillar Inc. Pressure compensated hydraulic system. 5,081,839, Cl. 60-468.000.

Mead, Carver A.; Allen, Timothy P.; Faggin, Federico; and Anderson, Janeen D. W., to Synaptics, Incorporated. Synaptic element and array. 5,083,044, Cl. 307-311.000.

Means, James E.: *See—*
Hardt, Lee R.; and Means, James E., 5,083,041, Cl. 290-52.000.

Mechnich, Klaus: *See—*
Wess, Othmar; Novak, Pavel; Mechnich, Klaus; and Schultheiss, Reiner, 5,081,984, Cl. 128-24.0EL.

Mecklenfeld, Hermann: *See—*
Kirchhoff, Bernd; and Mecklenfeld, Hermann, 5,082,187, Cl. 241-84.000.

Medcor, Inc.: *See—*
Kramer, Steven G., 5,082,129, Cl. 215-221.000.

Meeus, Marcel; and Strauven, Yvan, to S.A. Acec-Union Miniere N.V. Zinc alloy powder for alkaline batteries. 5,082,622, Cl. 420-514.000.

Mefina S.A.: *See—*
Jimenez, Antonio; and Combepine, Michel, 5,083,069, Cl. 318-558.000.

Meier, Kurt, to Ciba-Geigy Corporation. Process for the preparation of metallocene complexes. 5,082,952, Cl. 549-3.000.

Meinel, Fred; and Eichhorn, Richard, to Siemens Aktiengesellschaft. X-ray radiator. 5,083,307, Cl. 378-200.000.

Meives, Otis, to Pemco Company. Method and apparatus for manipulating stacks of paper sheets in wrapping machines. 5,081,821, Cl. 53-466.000.

Mejia, Augustine G. Roof vent cap. 5,081,914, Cl. 454-367.000.

Mel Appel Ltd.: *See—*
Appel, Mel; and Rivette, Denni, 5,082,291, Cl. 273-346.000.

Meland, Edmund: *See—*
Holmstrom, Roger P.; Meland, Edmund; and Powazinik, William, 5,082,799, Cl. 437-129.000.

Melin, Per A.: *See—*
Schiller, Mikael A. W.; Melin, Per A.; and Edlund, Leif E., 5,081,738, Cl. 15-339.000.

Melnik, Joseph; Cheney, Michael C.; and Vargas, Anthony, to Elizabeth Arden Co., Division of Conopco, Inc. Odorless cosmetic compositions in gelatin capsules. 5,082,661, Cl. 424-401.000.

Melotik, Joseph J., to Ford Motor Company. Passive impact restraining vehicular steering column assembly. 5,082,311, Cl. 280-777.000.

Membrane Technology & Research, Inc.: *See—*
Athayde, Amulya L.; Wijmans, Johannes G.; and Baker, Richard W., 5,082,471, Cl. 55-16.000.

Menday, Elisa C. Disposable fitted birthing sheet. 5,081,729, Cl. 5-487.000. .

Mentink, Maria M. F.: *See—*
Van den Oetelaar, Petrus J. M.; and Mentink, Maria M. F., 5,082,864, Cl. 514-646.000.

Mercat, Jean-Pierre, to Look, S.A. Steplessly variable transmission. 5,081,877, Cl. 74-116.000.

Mercedes-Benz AG: *See—*
Dahm, Rolf-Wolfram; Vollmer, Hermann; and Wolf, Erwin, 5,081,976, Cl. 123-90.480.

Merchant, Roger R. Unplugging apparatus. 5,083,042, Cl. 307-149.000.

Mercieri, Francesco N.: *See—*
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Merck & Co., Inc.: *See—*
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Merlin Gerin: *See—*
Barrault, Michel; Schuster, Philippe; Moussanet, Roland; and Bresson, Raymond, 5,083,081, Cl. 324-126.000.

Merrell Dow Pharmaceuticals: *See—*
Palfreyman, Michael G.; Wiech, Norbert L.; Cheng, Hsien C.; and Kane, John M., 5,082,837, Cl. 514-183.000.

Merten, Charles W., Jr., to United States of America, Energy. Apparatus and method for pressure testing closure disks. 5,081,862, Cl. 73-37.000.

Mertens, William J. Projectile having a movable interior fuze. 5,081,929, Cl. 102-273.000.

Mesher, Darel E.: *See—*
Poehlman, William F. S.; and Mesher, Darel E., 5,082,173, Cl. 236-11.000.

Messer, Philip H.: *See—*
Gallup, Darrell L.; Featherstone, John L.; Reverente, Jessie P.; and Messer, Philip H., 5,082,492, Cl. 75-712.000.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
Frye, Andreas; Kruse, Jurgen; Weyand, Julius; Bettermann, Joachim; and Bringmann, Dirk, 5,083,127, Cl. 342-1.000.

Meuhlner, Roland O.: *See—*
Kasakevich, Mark L.; Krasner, Donald H.; Secrist, Jerry W.; and Meuhlner, Roland O., 5,082,613, Cl. 264-178.00R.

Mevis, Blake A.: *See—*
Wyatt, William B.; Burnette, Herbert M.; Callahan, Joseph G.; and Mevis, Blake A., 5,081,735, Cl. 15-104.920.

Meyer, Daniel F.: *See—*
Borgstrom, Alan D.; Bertini, Glen J.; and Meyer, Daniel F., 5,082,449, Cl. 439-88.000.

Meyer, Jurgen: *See—*
Frye, Gunter; Karius, Klaus-Dietmar; Kruse, Heinz-Josef; Sippel, Achim; Meyer, Jurgen; and Primus, Michael, 5,081,931, Cl. 102-489.000.

Meyer, Nicolas: *See—*
Boinot, Francois; Cousin, Michel; Hochin, Andre ; and Meyer, Nicolas, 5,082,918, Cl. 528-140.000.

Meyer, Runald: *See—*
Most, Egbert; Knop, Reinhard; and Meyer, Runald, 5,081,951, Cl. 118-126.000.

Meyers, James L.: *See—*
Hoback, Gregory L.; and Meyers, James L., 5,083,002, Cl. 219-74.000.

Mezzedimi, Vasco; and Frosini, Franco, to Nuovopignone-Industrie Meccaniche e Fonderia S.p.A. Device for keeping the annular outlet mouth of the gas volute always centered about the nozzle assembly in a gas turbine. 5,081,833, Cl. 60-39.320.

Micafil, AG: *See—*
Oesch, Gustav; Gmeiner, Paul; and Hofer, Urs, 5,082,535, Cl. 202-170.000.

Micheels, Ronald H.; Valdivia, Percy; and Hanoka, Jack I., to Mobil Solar Energy Corporation. Method of fabricating solar cells. 5,082,791, Cl. 437-2.000.

Mickiewicz, Josef, to Marker Deutschland GmbH. Fastener retainer. 5,082,407, Cl. 411-107.000.

Microelectronics and Computer Technology Corporation: *See—*
Spletter, Philip J.; and Goruganthu, Rama R., 5,083,007, Cl. 219-121.640.

Micron Technology, Inc.: *See—*
Cathey, David A., 5,082,524, Cl. 156-643.000.
Chan, Hiang C.; Fazan, Pierre; and Liu, Yauh-Ching, 5,082,797, Cl. 437-52.000.
Schultz, Laurence D., 5,081,796, Cl. 51-165.740.

Miedama, Donald L.: *See—*
Preller, Robert E.; and Miedama, Donald L., 5,082,304, Cl. 280-407.100.

Mieno, Fumitake: *See—*
Yamada, Masao; Nakaishi, Masafumi; Nakagawa, Kenji; Furumura, Yuji; Eshita, Takashi; and Mieno, Fumitake, 5,082,695, Cl. 427-249.000.

Mihara, Masami: *See—*
Miura, Yoshiaki; Mihara, Masami; and Hosomi, Hidezo, 5,082,892, Cl. 524-516.000.

Mihara, Yoshiki: *See—*
Matsuo, Hideshige; Yamamoto, Isamu; Itoh, Michio; Sato, Kuniaki; Nakamura, Yoshihiro; Tomita, Akia; and Mihara, Yoshiki, 5,082,166, Cl. 228-189.000.

Mikami, Ryuzo; Yoshitake, Makoto; and Okawa, Tadashi, to Dow Corning Toray Silicone Company, Ltd. Organopolysiloxane graft polyester and its manufacturing method. 5,082,916, Cl. 528-26.000.

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Kluger, Edward W.; and Moody, David J., 5,082,938, Cl. 544-38.000.

Mimura, Munehiko: *See—*
Nishiwaki, Fumihiko; and Mimura, Munehiko, 5,083,273, Cl. 364-424.100.

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Kishida, Kozo; Shishiuchi, Hiromi; and Mimura, Takao, 5,082,381, Cl. 400-216.000.

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Yasuda, Kikuo; Shibata, Kenyu; Minami, Nobuyoshi; Seki, Toshimi; Shiraiwa, Masafumi; Nakao, Tomio; Miyasaka, Katsuhiko;

Ishimori, Tsutomu; Gotanda, Kotaro; and Sasaki, Takako, 5,082,844, Cl. 514-253.000.

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Oinuma, Hitoshi; Yamanaka, Motosuke; Miyake, Kazutoshi; Hoshiko, Tomonori; Minami, Norio; Shoji, Tadao; Daiku, Yoshiharu; Sawada, Kohei; and Nomoto, Kenichi, 5,082,850, Cl. 514-317.000.

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Wilson, Edwin P., 5,082,232, Cl. 248-551.000.

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Peterson, Ronald C.; Jasperson, Keith E.; and Schilling, Robert J., 5,083,140, Cl. 346-107.00A.
Piotrowski, Chester; Bruzzone, Charles L.; T050832716g-Long; and McAllister, Jerome W., 5,083,112, Cl. 340-572.000.
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Doi, Isao, 5,082,756, Cl. 430-67.000.
Hanamoto, Hiroyuki; Higashio, Kimihiko; and Ito, Masazumi, 5,083,162, Cl. 355-218.000.
Ishida, Tokuji; Norita, Toshio; and Hasegawa, Jun, 5,083,207, Cl. 358-213.190.
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Mita Industrial Co., Ltd.: *See*—
Kamezaki, Yasushi, 5,082,270, Cl. 271-109.000.
Kumamoto, Hidechika, 5,083,217, Cl. 358-452.000.

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Fukuda, Takeshi; and Mita, Kunihiko, 5,082,596, Cl. 252-511.000.

Mita, Shiro: *See*—
Morita, Takakazu; Iso, Tadashi; Mita, Shiro; and Kawashima, Youichi, 5,082,836, Cl. 514-183.000.

Mitaka Denshi Kagaku Laboratory Inc.: *See*—
Hayashi, Yutaka; Sato, Masaaki; Muramatsu, Yuji; Yoshihara, Hirofumi; and Hasegawa, Teiji, 5,083,185, Cl. 357-38.000.

Mitsubishi Denki K.K.: *See*—
Isozumi, Shuzou; and Konishi, Keiichi, 5,081,875, Cl. 74-7.00R.
Kato, Hisao, 5,083,284, Cl. 364-508.000.
Kinbara, Yoshihide; Nishikawa, Morihisa; and Ozaki, Yoshio, 5,083,001, Cl. 219-69.180.
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Sakaue, Makoto, 5,083,000, Cl. 219-69.120.
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Ishizuka, Masahiro, 5,082,165, Cl. 228-179.000.
Niinobu, Koji; and Tokunoh, Futoshi, 5,082,800, Cl. 437-180.000.
Okada, Kazuhisa; and Okamoto, Akihiro, 5,083,186, Cl. 357-70.000.
Sakai, Kunito, 5,082,615, Cl. 264-510.000.
Sumida, Mamoru; and Matsumoto, Osamu, 5,081,978, Cl. 123-588.000.
Suzuki, Hironori; and Ikutame, Teruaki, 5,083,074, Cl. 318-625.000.
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Yamasaki, Takashi, 5,083,258, Cl. 395-725.000.

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Tomita, Atsushi; and Sakaguchi, Katsuyoshi, 5,082,434, Cl. 425-28.100.

Mitsubishi Kasei Corporation: *See*—
Taniguchi, Masao; Umezu, Kohei; Shirasaka, Tadashi; Inoue, Shinya; Shinpuku, Tetsuro; Mitsuka, Masayuki; and Hirata, Mayumi, 5,082,856, Cl. 514-423.000.

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Mitsubishi Paper Mills Limited: *See*—
Katsura, Toru; and Kaji, Hiroo, 5,082,724, Cl. 428-303.000.

Mitsubishi Petrochemical Company Limited: *See*—
Matsuura, Mitsuyuki; and Fujita, Takashi, 5,082,818, Cl. 502-119.000.

Mitsui, Kiichiro; Ishii, Tooru; Sano, Kuinio; and Inoue, Akira, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Carrier for gas-treating catalyst, method for production thereof and gas-treating catalyst incorporating said carrier therein. 5,082,820, Cl. 502-350.000.

Mitsui Toatsu Chemicals, Inc.: *See*—
Abe, Masaru; Kawai, Yoichi; and Hoshino, Minoru, 5,082,888, Cl. 524-449.000.
Asanuma, Tadashi; Yamamoto, Kazuhiko; Ito, Mitsuru; and Kawanishi, Kaoru, 5,082,893, Cl. 524-547.000.
Kitahara, Mikio; Machida, Koichi; Kubo, Takayuki; Torikai, Motoyuki; and Asahina, Koutarou, 5,082,880, Cl. 523-466.000.
Komiyama, Tadashi; Kuboyama, Hisaharu; Jimbo, Takashi; Watanabe, Hiroyoshi; Tokumoto, Shuichi; Endoh, Yumiko; Sugiyama, Eiichi; and Naganuma, Yoshitaro, 5,082,972, Cl. 564-480.000.

Mitsuka, Masayuki: *See*—
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Miura, Hiroshi. Resin die for sheet metal pressing and method for producing same. 5,081,861, Cl. 72-462.000.

Miura, Masato; Shimura, Tatsuo; Kariya, Tadaaki; Kawauchi, Norihiro; and Kurita, Sinichi, to Hitachi Ltd.; and Hitachi Haramachi Semiconductor. Lateral-type semiconductor device. 5,083,180, Cl. 357-43.000.

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Miyagawa, Ichirou, to Fuji Photo Film Co., Ltd. Composite light source unit and scanning device. 5,083,023, Cl. 250-327.200.

Miyake, Akira; Akai, Norio; and Taniguchi, Tomizo, to Hitachi Maxell, Ltd. Magnetic disc. 5,082,728, Cl. 428-329.000.

Miyake, Kazutoshi: *See*—
Oinuma, Hitoshi; Yamanaka, Motosuke; Miyake, Kazutoshi; Hoshiko, Tomonori; Minami, Norio; Shoji, Tadao; Daiku, Yoshiharu; Sawada, Kohei; and Nomoto, Kenichi, 5,082,850, Cl. 514-317.000.

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Sugiyama, Toshihisa; Yoshioka, Mamoru; Nakata, Kunihiko; Miyake, Takashi; and Kidokoro, Toru, 5,081,842, Cl. 60-612.000.

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Miyasaka, Katsuhiko: *See*—
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Mizuguchi, Sinichi: *See*—
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Mizukura, Noboru: *See*—
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Koga, Minoru; Watanabe, Takenori; Kamata, Toshio; Morishima, Satoshi; Mizusawa, Minoru; and Kobayashi, Kazunori, 5,082,752, Cl. 429-20.000.

Mobil Oil Corporation: *See*—
Breckenridge, Lloyd L.; Jorgensen, Diane V.; and Sapre, Ajit V., 5,082,983, Cl. 585-475.000.
Brown, deceased Lawrence M.; and Huang, Tracy J., 5,082,984, Cl. 585-481.000.
Gurevitch, Judithann; Yarmoska, Bruce S.; and Gunter, Harvey R., 5,082,902, Cl. 525-240.000.
Jones, Lloyd G.; Yeh, Charles S.; and Chow, Christopher V., 5,082,052, Cl. 166-51.000.

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Micheels, Ronald H.; Valdivia, Percy; and Hanoka, Jack I., 5,082,791, Cl. 437-2.000.

Mochizuki, Hideharu: *See—*
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Modern Controls, Inc.: *See—*
Reid, Philip L., 5,081,863, Cl. 73-38.000.

Moffatt, Frank S., to Imperial Chemical Industries plc. Sulphinyl compounds and their preparation. 5,082,966, Cl. 560-11.000.

Mohr, Wolfgang. Procedure for the breaking up of a stack formed from material in sheet form and device for the implementation of the procedure. 5,082,271, Cl. 271-161.000.

Mohring, Volker: *See—*
Burkhart, Georg; Fock, Jurgen; and Mohring, Volker, 5,082,868, Cl. 521-114.000.

Molinaro, James S., to SubMicron Systems, Inc. Sparger plate for ozone gas diffusion. 5,082,518, Cl. 156-345.000.

Molnar, Csaba; Hajos, Gyorgy; Szporny, Laszlo; Toth, Jozsef; Kiraly, Arpad; Boor nee Mezei, Anna; Csorgei, Janos; Szekely, Kristina; Forgacs, Lilla; Fekete, Gyorgy; Herenyi, Bulcsu; Holly, Sandor; and Szunyog, Jozsef, to Richter Gedeon Vegyeszeti Gyar R.T. Novel steroid diols, pharmaceutical compositions containing them and process for preparing same. 5,082,835, Cl. 514-180.000.

Molz, Udo, to Kampf GmbH & Co. Maschinenfabrik. Gripper carriage and transport assembly for a stretching frame. 5,081,750, Cl. 26-89.000.

Momont, Joseph A.: *See—*
Beula, David A.; Momont, Joseph A.; and Copa, William M., 5,082,571, Cl. 210-739.000.

Monnier, John R.; Godleski, Stephen A.; Low, Howard M.; McCullough, Laughlin G.; McGarry, Lynda W.; and Phillips, Gerald W., to Eastman Kodak Company. Isomerization of epoxyalkenes to 2,5-dihydrofurans. 5,082,956, Cl. 549-507.000.

Monnot, Michel: *See—*
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Monsanto Company: *See—*
Cartier, George E.; Piretti, Carl P.; and Simon, Robert H. M., 5,082,515, Cl. 156-212.000.
Padwa, Allen R., 5,082,742, Cl. 428-515.000.
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Bargigia, Gianangelo; Caporiccio, Gerardo; Tonelli, Claudio; Flabbi, Luciano; and Marchionni, Giuseppe, 5,083,082, Cl. 324-158.00F.

Montgomery, James M.; and Vernon, Curtis L., to Eastman Kodak Company. High-speed sheet inverter and method for inverting sheets. 5,082,272, Cl. 271-186.000.

Monus, Donald T., to Priest, Alfred R., a part interest. Method of raising fish. 5,081,954, Cl. 119-3.000.

Moody, David J.: *See—*
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Moody, Shona. Crib blanket holder. 5,081,730, Cl. 5-508.000.

Moore, Craig A.: *See—*
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Morabito, James: *See—*
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Morantz, Jack: *See—*
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Morehead, Leonard E., Jr. Parachute canopy. 5,082,210, Cl. 244-145.000.

Moreno, Gilbert C., to MSA Aircraft Interior Products, Inc. Window shade mechanism for a modular aircraft window. 5,082,043, Cl. 160-90.000.

Morgan, Allan C.: *See—*
Lee, Kam B.; Morgan, Allan C.; Richards, L. Willard; and Puckett, Dan K., 5,082,502, Cl. 134-1.000.

Morgan, Bruce S. Paddlewheel apparatus. 5,082,423, Cl. 416-111.000.

Mori, Kazuhiko: *See—*
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Mori, Yoshiaki: *See—*
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Morichika, Toshiaki; Tani, Toshio; Sakai, Chiaki; Koshimoto, Hideo; and Kadowaki, Tatsuhiko, to Kubota Ltd. Magnetic recording medium of thin metal film type. 5,082,750, Cl. 428-694.000.

Morikawa, Satoshi: *See—*
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Morita, Takakazu; Iso, Tadashi; Mita, Shiro; and Kawashima, Youichi, to Santen Pharmaceutical Co., Ltd. Compositions and methods of use of cyclic sulfur-containing compounds. 5,082,836, Cl. 514-183.000.

Morita, Tsutomu: *See—*
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Morita, Yoshitsugu; Yokoyama, Noriyasu; and Yoshida, Keiji, to Dow Corning Toray Silicone Co., Ltd. Curable resin composition containing dispersed particles of a cured silicone rubber. 5,082,891, Cl. 524-481.000.

Moritani, Tohei: *See—*
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Moroney, Paul: *See—*
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Morooka, Hisao, to TDK Corporation. Method of conducting plasma treatment. 5,082,685, Cl. 427-38.000.

Morrison, Stanley R.; Hykaway, Norma J.; Sears, William M.; and Frindt, Robert F., to Simon Fraser University. Bismuth molybdate gas sensor. 5,082,789, Cl. 436-132.000.

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Most, Egbert; Knop, Reinhard; and Meyer, Runald, to Jagenberg Aktiengesellschaft. Coater for a web of material that travels around a backing roll. 5,081,951, Cl. 118-126.000.

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Motorola, Inc.: *See—*
Bousman, Thomas W., 5,083,238, Cl. 361-413.000.
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Rhyne, George W., 5,083,018, Cl. 250-227.250.
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Mowill, Rolf J., 5,081,832, Cl. 60-39.161.

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Mrozinski, Curtis, to Pitney Bowes Inc. Envelope flap unfolder and enclosure inserter with jam-clearing access. 5,081,825, Cl. 53-569.000.

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Muacevic, Gojko: *See*—
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Muchowski, Joseph M.; and Cho, In-Seop, to Syntex (U.S.A.) Inc. Process for preparing 5-aroyl-2,3-dihydro-1H-pyrrolizine-1,1-dicarboxylates (II) and intermediates therefor. 5,082,950, Cl. 548-453.000.

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Nanbu, Tatuyoshi: *See—*
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National Slag Limited: *See—*
Spencer, Kenneth W.; and Horvat, David T., 5,082,483, Cl. 65-19.000.

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Kashimura, Masahiko, 5,083,048, Cl. 307-473.000.
Kiyono, Junji, 5,083,172, Cl. 357-23.600.
Miyazaki, Shinichi, 5,083,096, Cl. 330-279.000.
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Neese, Eric J. Water bed padded rail arrangement. 5,081,725, Cl. 5-424.000.

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Nelson, Terence J., to Bell Communications Research, Inc. Flat panel display utilizing leaky lightguides. 5,083,120, Cl. 340-784.000.

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Neubauer, Hans-Juergen: *See—*
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Nippon Kinzoku Co., Ltd.: *See*—
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Nippon Miktron Limited: *See*—
Yokoi, Kazuma, 5,082,903, Cl. 525-340.000.
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Awaji, Toshio; Ueda, Kenichi; and Atobe, Daisuke, 5,082,598, Cl. 525-518.000.
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Yoneda, Ryozo; Ohara, Hiroyuki; and Ohtsuka, Shinji, 5,081,955, Cl. 119-15.000.
Nippondenso Co., Ltd.: *See*—
Fukushima, Akira; Makino, Nobuhiko; Uchida, Kiyoyuki; Inoue, Hideo; and Sakai, Kazunori, 5,082,333, Cl. 303-96.000.
Nishiahta, Toshiaki: *See*—
Wong, Ooi; Nishiahta, Toshiaki; and Rytting, Joseph H., 5,082,866, Cl. 514-785.000.
Nishida, Tetsuji; Saito, Shinji; and Chino, Naoyoshi, to Fuji Photo Film Co., Ltd. Magnetic recording medium for a video tape recorder and a method for preparing the same. 5,082,729, Cl. 428-329.000.
Nishii, Michiharu, to Aisin Seiki Kabushiki Kaisha. Hydraulic braking system with second booster chamber. 5,081,841, Cl. 60-56.000.
Nishijima, Toyoki; Tanji, Masaki; Mizukura, Noboru; and Sugita, Shuichi, to Konica Corporation. Silver halide color photographic light-sensitive material. 5,082,766, Cl. 430-551.000.
Nishikawa, Masayuki: *See*—
Fukuda, Yuzuru; Nishikawa, Masayuki; Yagi, Shigeru; and Karakida, Ken-ichi, 5,082,760, Cl. 430-127.000.
Nishikawa, Morihisa: *See*—
Kinbara, Yoshihide; Nishikawa, Morihisa; and Ozaki, Yoshio, 5,083,001, Cl. 219-69.180.
Nishikawa, Yasuo: *See*—
Yanai, Akio; and Nishikawa, Yasuo, 5,082,714, Cl. 428-141.000.
Nishimoto, Akihiko; Hosoya, Yoshihiro; and Urabe, Toskhiaki, to Nippon Kokan Kabushiki Kaisha. Method for producing non-oriented steel sheets. 5,082,510, Cl. 148-111.000.
Nishioka, Syoji, to Kabushiki Kaisha Toshiba. Access mechanism for magnetic disk apparatus. 5,083,230, Cl. 360-78.040.
Nishiwaki, Fumihiko; and Mimura, Munehiko, to Mitsubishi Denki K.K. Temperature detection for electromagentic clutch of vehicle. 5,083,273, Cl. 364-424.100.
Nishiyama, Toshio: *See*—
Ushigami, Yoshiyuki; Konno, Toyohiko; Suga, Yozo; Ueno, Kiyoshi; Itoh, Mikio; Nishiyama, Toshio; and Takimoto, Kenichi, 5,082,509, Cl. 148-111.000.
Nishizawa, Yoshinori: *See*—
Tamura, Tadashi; Kiyomine, Akira; Tanaka, Michio; Nishizawa, Yoshinori; Tagami, Hidetoshi; Ogawa, Masahiko; Yoshihara, Toru; Muraoka, Tsutomu; and Kawase, Jiro, 5,082,467, Cl. 8-409.000.
Nishizawa, Yoshio: *See*—
Sadano, Yutaka; Nakashima, Yuuji; Tanaka, Takashi; Kawasaki, Takatoshi; Shibata, Shinji; Aoyagi, Hikaru; Nishizawa, Yoshio; and Kasahara, Akihiko, 5,082,167, Cl. 228-258.000.
Nissan Motor Company, Ltd.: *See*—
Fukushima, Masao; Murakami, Kei; Kuriyama, Shigeru; Nakamura, Yozo; Maeda, Yuji; Nakamura, Kenichi; Mashino, Keiichi; and Kadomukai, Yuzo, 5,083,038, Cl. 290-40.00A.
Ide, Takanobu, 5,081,881, Cl. 74-573.00F.
Joji, Shimizu, 5,082,174, Cl. 237-2.00A.
Kasai, Junichi; Imai, Hiroshi; and Nanbu, Tatuyoshi, 5,083,311, Cl. 381-63.000.
Kato, Yuji, 5,081,887, Cl. 74-866.000.
Kawagoe, Kenji; Ito, Hideo; and Yokote, Masatsugu, 5,083,275, Cl. 364-424.050.
Sakata, Masao; Segoshi, Toru; Futami, Tohru; and Iijima, Yoichi, 5,083,065, Cl. 315-307.000.
Sasaki, Michiaki; Yamamoto, Kiyokazu; and Matsuki, Toshiyuki, 5,082,426, Cl. 417-198.000.
Nitta, Masahiro: *See*—
Yamaguchi, Hideki; Nitta, Masahiro; and Furukawa, Katsunori, 5,082,999, Cl. 219-10.55B.
Niwa, Kunio: *See*—
Matsushita, Hiroomi; Maekawa, Masao; Hasegawa, Masaji; Yamaguchi, Tetsuo; and Niwa, Kunio, 5,082,437, Cl. 425-225.000.
NKK Corporation: *See*—
Matsui, Naoki; Iwato, Shuichi; Kaneto, Shuji; Kubo, Takami; Yamazaki, Masayuki; and Moriyama, Shigeru, 5,081,857, Cl. 72-6.000.
Noguchi, Takao: *See*—
Ito, Yukio; Akazawa, Tadashi; and Noguchi, Takao, 5,081,858, Cl. 72-43.000.
Noguchi, Toshiaki: *See*—
Saito, Tsukasa; Kiriyama, Hiroshi; and Noguchi, Toshiaki, 5,082,195, Cl. 242-199.000.
Nohmi Bosai Kabushiki Kaisha: *See*—
Takahashi, Kaoru; Tsumuji, Akio; and Shutoku, Ryuji, 5,083,107, Cl. 340-506.000.
Nolte, David G.; Haskin, Helen K.; and Colling, Edwin L., Jr., to Texaco Inc. Method of performing hydrous pyrolysis for studying the kinetic parameters of hydrocarbons generated from source material. 5,082,787, Cl. 436-31.000.
Nomoto, Kenichi: *See*—
Oinuma, Hitoshi; Yamanaka, Motosuke; Miyake, Kazutoshi; Hoshiko, Tomonori; Minami, Norio; Shoji, Tadao; Daiku, Yoshiharu; Sawada, Kohei; and Nomoto, Kenichi, 5,082,850, Cl. 514-317.000.
Nomura, Akihiro; and Kiyohara, Toshimi, to Sharp Kabushiki Kaisha. System for maximizing utilization of a display memory. 5,083,121, Cl. 340-799.000.
Nomura, Yasushi: *See*—
Imai, Kyoko; Nomura, Yasushi; and Umetsu, Hiroshi, 5,083,283, Cl. 364-497.000.
Nomura, Yutaka: *See*—
Okabe, Susumu; Masaki, Mitsuo; Yamakawa, Tomio; Matsukura, Hitoshi; and Nomura, Yutaka, 5,082,943, Cl. 546-210.000.
Nonami, Tohru; and Yasui, Nobuo, to TDK Corporation. Ceramic material and method for making. 5,082,808, Cl. 501-95.000.
Nonomura, Kinzo; Kitao, Satoshi; Murai, Ryuichi; Hashiguchi, Jumpei; Hamada, Kiyoshi; and Takahashi, Masayuki, to Matsushita Electric Industrial Co., Ltd. Flat panel display device. 5,083,058, Cl. 313-482.000.
Nordson Corporation: *See*—
Saidman, Laurence B.; and Smith, James C., 5,082,142, Cl. 222-1.000.
Nordstrom, Roy, to Teleco Oilfield Services Inc. Nuclear logging tool electronics including programmable gain amplifier and peak detection circuits. 5,083,124, Cl. 340-853.000.
Norita, Toshio: *See*—
Ishida, Tokuji; Norita, Toshio; and Hasegawa, Jun, 5,083,207, Cl. 358-213.190.
Norsolor: *See*—
Boinot, Francois; Cousin, Michel; Hochin, Andre ; and Meyer, Nicolas, 5,082,918, Cl. 528-140.000.
North American Philips Corporation: *See*—
Trovato, Karen I.; and Dorst, Leendert, 5,083,256, Cl. 364-148.000.
Northern Telecom Europe Limited: *See*—
Sutehall, Ralph; and Summers, Andrew, 5,082,380, Cl. 385-114.000.
Novak, Pavel: *See*—
Wess, Othmar; Novak, Pavel; Mechnich, Klaus; and Schultheiss, Reiner, 5,081,984, Cl. 128-24.0EL.
Nowak, William J.; and Hinton, John H., to Xerox Corporation. Polygon scanner with predictable facet deformation characteristics. 5,083,138, Cl. 346-1.100.
Nugues, Pierre; and Bizet, Marc, to Thomson Tubes Electroniques. Microwave tube provided with at least one axial part, fitted cold into a coaxial envelope. 5,083,060, Cl. 315-3.500.
Nunoya, Hidetsugu: *See*—
Kanda, Minoru; Komatsu, Mikio; Nunoya, Hidetsugu; Fujii, Yasuhiro; and Abiko, Toshio, 5,083,132, Cl. 343-700.0MS.
Nuovopignone-Industrie Meccaniche e Fonderia S.p.A.: *See*—
Mezzedimi, Vasco; and Frosini, Franco, 5,081,833, Cl. 60-39.320.

Nusair, Marwan E.: *See—*
Valentine, Michael D.; Groth, Clarence R.; Scholl, Stephen R.; and Nusair, Marwan E., 5,083,129, Cl. 342-20.000.
Nwanna, Dozie C. B. Apparatus for a game. 5,082,287, Cl. 273-241.000.
Nylander, R. Fred: *See—*
Adler, Richard J.; and Nylander, R. Fred, 5,083,093, Cl. 328-65.000.
Nynex Corporation: *See—*
Rauh, Michael M.; and Worrell, Eugene H., 5,082,131, Cl. 220-4.210.
O&K Orenstein & Koppel Aktiengesellschaft: *See—*
Kirchhoff, Bernd; and Mecklenfeld, Hermann, 5,082,187, Cl. 241-84.000.
Oakes, Fred T.: *See—*
Warren, Harold C., III; and Oakes, Fred T., 5,082,780, Cl. 435-191.000.
Oaks, Richard W., to Hughes Aircraft Company. Digital electronics assembly for a tube-launched missile. 5,082,199, Cl. 244-3.120.
Obana, Kazuyoshi: *See—*
Ueno, Kouhei; Akagawa, Tomohiko; and Obana, Kazuyoshi, 5,082,646, Cl. 423-554.000.
Obata, Koei; and Kai, Takashige, to Daikin Industries, Inc. Method and apparatus for applying a shadowing operation to figures to be drawn for displaying on CRT-display. 5,083,287, Cl. 395-126.000.
Obermeier, Josef; Spangenberg, Rolf; and Linke, Theodor, to Hilti Aktiengesellschaft. Hollow drill bit. 5,082,070, Cl. 175-403.000.
O'Brien, Michael J.: *See—*
Desorcie, James L.; and O'Brien, Michael J., 5,082,686, Cl. 427-54.100.
Occidental Chemical Corporation: *See—*
Fritts, Sharon D.; and Bommaraju, Tilak V., 5,082,567, Cl. 210-673.000.
Ochi, Hisashi: *See—*
Miki, Iyoko; Tsubota, Hiroyuki; Tsuchiko, Toshio; and Ochi, Hisashi, 5,082,769, Cl. 435-19.000.
Ochi, Joji, to Daikin Industries, Ltd. Electric fan motor and a method for producing the same. 5,083,052, Cl. 310-64.000.
Ochiai, Koichi; Aoshima, Shigeru; and Kamiunten, Shoji, to Yamatake-Honeywell Co., Ltd. Respiratory air flowmeter. 5,081,866, Cl. 73-204.210.
Oda, Kenji: *See—*
Saitou, Toshihiko; Yamashita, Takashi; Ishii, Kenichi; Ogawa, Masanobu; Shibata, Shinya; Oda, Kenji; and Kume, Masaharu, 5,083,134, Cl. 343-713.000.
O'Dell, Thomas M.: *See—*
Gaulke, David A.; O'Dell, Thomas M.; and Overmyer, Ricky L., 5,083,308, Cl. 379-381.000.
Odis Irrigation Equipment Ltd.: *See—*
Eli, Nissim; and Marrache, Albert, 5,082,560, Cl. 210-206.000.
Odontex, Inc.: *See—*
Wong, Ooi; Nishiahta, Toshiaki; and Rytting, Joseph H., 5,082,866, Cl. 514-785.000.
Oesch, Gustav; Gmeiner, Paul; and Hofer, Urs, to Micafil, AG. Apparatus for the extraction of oil or polychlorinated biphenyl from electrical parts through the use of solvents and for distillation of the solvents. 5,082,535, Cl. 202-170.000.
Oftring, Alfred; Birnbach, Stefan; Baur, Richard; Gousetis, Charalampos; and Trieselt, Wolfgang, to BASF Aktiengesellschaft. 2-methyl- and 2-hydroxymethyl-serine-N,N-diacetic acid and derivatives thereof. 5,082,599, Cl. 252-546.000.
Ogasawara, Ichiro: *See—*
Akasaka, Nobuhiro; Zakoh, Toshiaki; Yamanishi, Toru; Katsurashima, Wataru; and Ogasawara, Ichiro, 5,082,347, Cl. 385-114.000.
Ogata, Masato: *See—*
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Ogawa, Masahiko: *See—*
Hara, Yasuaki; and Ogawa, Masahiko, 5,082,915, Cl. 528-15.000.
Tamura, Tadashi; Kiyomine, Akira; Tanaka, Michio; Nishizawa, Yoshinori; Tagami, Hidetoshi; Ogawa, Masahiko; Yoshihara, Toru; Muraoka, Tsutomu; and Kawase, Jiro, 5,082,467, Cl. 8-409.000.
Ogawa, Masanobu: *See—*
Saitou, Toshihiko; Yamashita, Takashi; Ishii, Kenichi; Ogawa, Masanobu; Shibata, Shinya; Oda, Kenji; and Kume, Masaharu, 5,083,134, Cl. 343-713.000.
Ogawa, Tetsuro: *See—*
Tagaya, Nobuaki; Kuwahara, Hideyuki; Hashimoto, Takao; Komatsu, Noriko; Fukamachi, Keiko; Maeshima, Tsugio; Ishikawa, Toshihiro; and Ogawa, Tetsuro, 5,082,566, Cl. 210-656.000.
Ogawa, Yasuaki: *See—*
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Ogden Martin Systems, Inc.: *See—*
Schmidt, John K., 5,082,572, Cl. 210-744.000.
Ohara, Hiroyuki: *See—*
Yoneda, Ryozo; Ohara, Hiroyuki; and Ohtsuka, Shinji, 5,081,955, Cl. 119-15.000.
Ohashi, Ken, to Shin-Etsu Chemical Co., Ltd. Rare earth based permanent magnet having corrosion-resistant surface film and method for the preparation thereof. 5,082,745, Cl. 428-552.000.
Ohashi, Takashi: *See—*
Fukuda, Hiroya; Akou, Masayuki; Sawa, Eiji; and Ohashi, Takashi, 5,082,870, Cl. 521-159.000.
Ohashi, Toshiharu: *See—*
Soushin, Koji; Koshin, Hiroaki; Okamoto, Shinichi; and Ohashi, Toshiharu, 5,083,067, Cl. 318-254.000.
Ohba, Akio, to Sony Corporation. Video image motion data generator for computer graphics. 5,083,201, Cl. 358-105.000.
Ohbayashi, Keiji: *See—*
Onodera, Kaoru; Ohbayashi, Keiji; Okumura, Mitsuhiro; and Chino, Shigeo, 5,082,765, Cl. 430-377.000.
O'Hearn, Stephanie L.: *See—*
Corbitt, John D., Jr.; Kuzmick, Kenneth M.; O'Hearn, Stephanie L.; and Santilli, Albert N., 5,082,111, Cl. 206-363.000.
Ohinata, Yoshiharu, to Riso Kagaku Corporation. Mimeographic printing machine. 5,081,924, Cl. 101-120.000.
Ohishi, Yuki, to Alps Electric Co., Ltd. Method of erasing printing of thermal transfer printer. 5,082,383, Cl. 400-695.000.
Ohkubo, Masaki: *See—*
Chikamori, Takeshi; Ohkubo, Masaki; Kamisakamoto, Akira; Imai, Shoji; Tsubota, Shunichi; Uemura, Hideyuki; and Wakutani, Shinichi, 5,081,974, Cl. 123-478.000.
Ohmori, Takashi: *See—*
Ishibashi, Yoji; Ohmori, Takashi; Kato, Fumio; Kuroda, Michio; and Iizuka, Nobuyuki, 5,081,843, Cl. 60-733.000.
Ohmura, Hiroshi: *See—*
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Ohnaka, Kiyoshi: *See—*
Kamiyama, Satoshi; and Ohnaka, Kiyoshi, 5,082,162, Cl. 228-123.000.
Ohnishi, Masatoshi: *See—*
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Ohnishi, Youichi: *See—*
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Ohno, Mikio: *See—*
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Ohnstein, Thomas R.: *See—*
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Ohshita, Koichi: *See—*
Sato, Susumu; Wakamiya, Koichi; and Ohshita, Koichi, 5,082,360, Cl. 359-675.000.
Ohta, Hiroko: *See—*
Miyamoto, Hirofumi; Takase, Tsugiko; Okada, Takao; Mishima, Shuzo; and Ohta, Hiroko, 5,083,022, Cl. 250-306.000.
Ohta, Kenji: *See—*
Matoba, Hirotsugu; Maeda, Shigemi; Ohta, Kenji; and Kobayashi, Shozo, 5,083,301, Cl. 369-32.000.
Miyake, Tomoyuki; Katayama, Hiroyuki; Nakayama, Junichiro; Murakami, Yoshiteru; and Ohta, Kenji, 5,082,690, Cl. 427-130.000.
Ohta, Norio: *See—*
Shiiki, Kazuo; Shiroishi, Yoshihiro; Ohta, Norio; Tsuyoshi, Toshiaki; Takano, Hisashi; and Kugiya, Fumio, 5,083,226, Cl. 360-77.050.
Ohtsuka, Shinji: *See—*
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Ohtuska, Yasushi: *See—*
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Oi, Nakao: *See—*
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Oikawa, Katsuyuki: *See—*
Ishihara, Toshinobu; Kubota, Tohru; Endo, Mikio; and Oikawa, Katsuyuki, 5,082,960, Cl. 556-444.000.
Oinuma, Hitoshi; Yamanaka, Motosuke; Miyake, Kazutoshi; Hoshiko, Tomonori; Minami, Norio; Shoji, Tadao; Daiku, Yoshiharu; Sawada, Kohei; and Nomoto, Kenichi, to Eisai Co., Ltd. Piperidine derivatives and therapeutic and preventive agents for arrhythmia containing same. 5,082,850, Cl. 514-317.000.
Oji, Akihito: *See—*
Konishi, Ryoji; Oji, Akihito; Kawaji, Toshikuni; Makaya, Osami; Ishihara, Manabu; and Iwasa, Akira, 5,082,663, Cl. 424-445.000.
Okabe, Susumu; Masaki, Mitsuo; Yamakawa, Tomio; Matsukura, Hitoshi; and Nomura, Yutaka, to Nippon Chemiphar Co., Ltd. Novel imidazole derivatives. 5,082,943, Cl. 546-210.000.
Okada, Hitoshi: *See—*
Owa, Hideo; Sugiki, Mikio; Okada, Hitoshi; and Takahashi, Hiroo, 5,083,212, Cl. 358-319.000.
Okada, Kazuhisa; and Okamoto, Akihiro, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device lead frame with rounded edges. 5,083,186, Cl. 357-70.000.
Okada, Masato; and Sakamoto, Makoto, to Tokuyama Soda Co., Ltd. Method for quantitative determination of polyamines. 5,082,770, Cl. 435-26.000.
Okada, Takao: *See—*
Miyamoto, Hirofumi; Takase, Tsugiko; Okada, Takao; Mishima, Shuzo; and Ohta, Hiroko, 5,083,022, Cl. 250-306.000.
Okada, Toyokazu; Higashi, Koji; and Taguchi, Satoshi, to Sumitomo Chemical Co., Ltd. Light-polarizing films. 5,082,601, Cl. 252-585.000.
Okajima, Nariaki: *See—*
Takeda, Naohiro; Otani, Yuzo; Okajima, Nariaki; and Kita, Masahiro, 5,082,730, Cl. 428-336.000.

Okajima, Yoshinori, to Fujitsu Limited. Semiconductor memory device having a redundancy. 5,083,294, Cl. 365-200.000.
Okamoto, Akihiro: *See*—
Okada, Kazuhisa; and Okamoto, Akihiro, 5,083,186, Cl. 357-70.000.
Okamoto Industries, Inc.: *See*—
Sekido, Hiroshi; Sakuma, Tadashi; and Hioki, Toshimichi, 5,082,326, Cl. 297-284.00R.
Okamoto, Shinichi: *See*—
Soushin, Koji; Koshin, Hiroaki; Okamoto, Shinichi; and Ohashi, Toshiharu, 5,083,067, Cl. 318-254.000.
Okano, Masami; Takeuchi, Kunihiro; and Ishizuka, Hideki, to Zexel Corporation. System for controlling safety device for vehicle. 5,083,276, Cl. 364-424.050.
Okawa, Dobson M.: *See*—
Theobald, Paul E.; Seymour, Daniel B.; and Okawa, Dobson M., 5,082,790, Cl. 436-536.000.
Okawa, Tadashi: *See*—
Mikami, Ryuzo; Yoshitake, Makoto; and Okawa, Tadashi, 5,082,916, Cl. 528-26.000.
Oki Electric Industry Co., Ltd.: *See*—
Utunomiya, Jiro; Iida, Saburo; Sibuya, Hitosi; Kusaba, Kazunori; and Narumi, Isao, 5,081,764, Cl. 29-843.000.
Okita, Junji: *See*—
Fujiwara, Mitsuru; Suzuki, Akira; and Okita, Junji, 5,082,427, Cl. 417-292.000.
Okita, Tsutomu: *See*—
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Okitsumo Incorporated: *See*—
Hironaka, Bungo; and Yoshioka, Fumitaka, 5,082,386, Cl. 401-206.000.
Oklejas, Eli, Jr.: *See*—
Oklejas, Robert A.; and Oklejas, Eli, Jr., 5,082,428, Cl. 417-362.000.
Oklejas, Robert A.; and Oklejas, Eli, Jr. Centrifugal pump. 5,082,428, Cl. 417-362.000.
Okumura, Mitsuhiro: *See*—
Onodera, Kaoru; Ohbayashi, Keiji; Okumura, Mitsuhiro; and Chino, Shigeo, 5,082,765, Cl. 430-377.000.
Okura Kogyo Kabushiki Kaisha: *See*—
Tange, Yoshihiro; and Matsuda, Hideaki, 5,082,607, Cl. 264-44.000.
Olbrich, Michael E.; Jones, Rebecca L.; and Fenstermaker, Roger W., to Phillips Petroleum Company. Treatment of hydrocarbons. 5,082,987, Cl. 585-737.000.
Olichney, Michael D., to Abbott Laboratories. Solution pumping system including disposable pump cassette. 5,082,014, Cl. 137-1.000.
Olivier, Michel: *See*—
Rotman, Frederic; Rancon, Yannick; Queille, Philippe; and Olivier, Michel, 5,082,606, Cl. 264-40.600.
Ollila, Harry, to A. Ahlstrom Corporation. Method and apparatus for controlled bidirectional feeding of particulate matter. 5,081,938, Cl. 110-269.000.
Olympus Optical Co., Ltd.: *See*—
Igarashi, Tsutomu, 5,083,223, Cl. 359-708.000.
Miyamoto, Hirofumi; Takase, Tsugiko; Okada, Takao; Mishima, Shuzo; and Ohta, Hiroko, 5,083,022, Cl. 250-306.000.
Nagasaki, Tatsuo; and Komiya, Yasuhiro, 5,083,150, Cl. 354-402.000.
Yanagida, Tsuneo; Azuma, Motoo; and Kikkawa, Kenji, 5,083,303, Cl. 369-48.000.
Omata, Yasushi: *See*—
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Omega Environmental, Inc.: *See*—
Zaim, Adil Z., 5,081,864, Cl. 073-049.200.
Omron Tateisi Electronics Co.: *See*—
Nakanishi, Hiroaki; Fukumoto, Hidehiro; Shibata, Kuniharu; and Matsumoto, Hidetoshi, 5,082,363, Cl. 356-1.000.
Onaka, Toru: *See*—
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Onitsuka, Yoshihiro: *See*—
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Ono, Katsuhiro: *See*—
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Ono, Tomio: *See*—
Kondou, Yuu; and Ono, Tomio, 5,083,056, Cl. 310-332.000.
Onoda Cement Co., Ltd.: *See*—
Taira, Hatsuo; Ikeda, Masakazu; Harada, Yoshio; and Hagiwara, Hiroshi, 5,082,741, Cl. 428-469.000.
Onodera, Kaoru; Ohbayashi, Keiji; Okumura, Mitsuhiro; and Chino, Shigeo, to Konica Corporation. Method of processing light-sensitive silver halide photographic material. 5,082,765, Cl. 430-377.000.
Ooi, Leng H.: *See*—
Chason, Marc K.; Kellen, Robert A.; Ooi, Leng H.; and Revtai, George, 5,083,236, Cl. 361-401.000.
Oono, Michio; and Nagata, Meiro, to Kyocera Corporation. Particulate trap filter regenerative system. 5,082,478, Cl. 55-466.000.
Oranias Olsina, Gloria: *See*—
Ribalta Baro, Josep M.; Oranias Olsina, Gloria; and Campon Pardo, Julio, 5,082,969, Cl. 564-349.000.
Ording, Leroy E.; and Freitag, Otto W., to Ford Motor Company. Adjustable mounting assembly for electro-optical devices. 5,082,223, Cl. 248-183.000.
Orlandi, Alessio, to Galatron S.r.l. Antinoise baffle for screw type valves with ceramic disk seals. 5,082,241, Cl. 251-127.000.
Orsan: *See*—
Strissel, Jerry; Pollak, George; and Kindiger, Bryan, 5,082,993, Cl. 800-200.000.
Orsborn, Jesse H.: *See*—
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Ostrander, William J., to Chevron Research and Technology Company. Method of improving the seismic resolution of geologic structures. 5,083,297, Cl. 367-36.000.
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Fargo, Richard N., 5,082,091, Cl. 187-17.000.
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Kaminski, Ronald S., 5,082,439, Cl. 425-504.000.
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Oxy USA Inc.: *See*—
Blumer, David J., 5,082,058, Cl. 166-300.000.
Oy Erco-Mek AB: *See*—
Vierikko, Pentti, 5,082,036, Cl. 144-3.00D.
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Shimizu, Hiroshi; and Ozawa, Yoshiaki, 5,082,753, Cl. 429-26.000.
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Scott, Clyde A., 5,083,076, Cl. 320-2.000.
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Pack, Harold R. Firearm safety lock. 5,081,779, Cl. 42-70.110.
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Clark, Stephen S.; and Palmer, Brian L., 5,083,092, Cl. 324-693.000.

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Insko, Leo J., 5,082,227, Cl. 248-343.000.

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Gartside, Charles H., III; Panuska, Andrew J.; and Patel, Parbhubhai D., 5,082,348, Cl. 385-111.000.

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Zimmermann, John, 5,082,117, Cl. 229-218.000.

Paranto, Arlen C.: *See—*
Paranto, Steve A.; and Paranto, Arlen C., 5,082,289, Cl. 273-318.000.

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Park, Chan S.: *See—*
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Andreotti, Peter E.; Morse, Irwin S.; Thornthwaite, Jerry T.; Heimer, Malcolm L.; Salinger, Jorge D.; and Sobodowski, Joseph J., 5,082,628, Cl. 422-82.080.

Parke, Ian, to British Telecommunications Public Limited Company. Motion detector for video signals including a novel line comparison processing scheme. 5,083,202, Cl. 358-105.000.

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Jackson, David A.; McGee, Edward; and Parker, David A., 5,082,675, Cl. 426-54.000.

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Westhoff, James A.; Kelly, James A.; and Parker, James E., 5,081,802, Cl. 52-20.000.

Parker, Paul D.; and Livesay, Fred C., Jr., to Deere & Company. Hydraulic hose support for an implement. 5,082,217, Cl. 248-75.000.

Parker, Robert. Transition illumination lamp. 5,083,251, Cl. 362-255.000.

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Parravicini, Francesco: *See—*
Farina, Carlo; Pinza, Mario; Cerri, Alberto; and Parravicini, Francesco, 5,082,939, Cl. 544-239.000.

Partin, Judy K.; Ward, Thomas E.; and Grey, Alan E., to United States of America, Energy. Fiber optic detector for immuno-testing. 5,082,630, Cl. 422-83.000.

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Mueller, Richard A.; Nakao, Akira; and Partis, Richard A., 5,082,854, Cl. 514-357.000.

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Pasch, Nicholas F.; and Schoenborn, Philippe, to LSI Logic Corporation. Forming a physical structure on an integrated circuit device and determining its size by measurement of resistance. 5,082,792, Cl. 437-7.000.

Pasco, Ian K., to Technophone Limited. Light guide. 5,083,240, Cl. 362-26.000.

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Pastan, Ira; FitzGerald, David; and Ogata, Masato, to United States of America, Health and Human Services. Selectively cytotoxic IL-4-PE40 fusion protein. 5,082,927, Cl. 530-351.000.

Patel, Chandrakant B.: *See—*
Ko, Jung-Wan; and Patel, Chandrakant B., 5,083,197, Cl. 358-19.000.

Patel, Navnit R. Recreational flying vehicle. 5,082,198, Cl. 244-2.000.

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Goldstein, Joel M.; Patel, Vina; and Wiley, Steven J., 5,082,573, Cl. 210-749.000.

Paterson, John R.; and Warren, Leonard, to Vickers Shipbuilding & Engineering Limited. Electrical cables. 5,082,995, Cl. 174-113.00R.

Patil, Shitalprasad N.: *See—*
Webb, John L.; Kilgore, Robert D.; and Patil, Shitalprasad N., 5,082,563, Cl. 210-631.000.

Patmore, Leslie: *See—*
Pascal, Jean-Claude; Patmore, Leslie; Pfister, Jurg; Blondet, Dominique; and Armstrong, John M., 5,082,847, Cl. 514-312.000.

Patrick, Joseph H., Jr., to Pearne & Lacy Machine CO., Inc. Method for forming a blended cube of brick. 5,082,420, Cl. 414-786.000.

Patti, Alfonso: *See—*
Ballaro', David; Patti, Alfonso; Ferla, Giuseppe; and Frisina, Ferruccio, 5,083,182, Cl. 357-46.000.

Patton, Robert T.; Hall, David M.; and Vaughn, Walter L., to Dow Chemical Company, The. Polymer salt complex for fiber or fabric treatment. 5,082,697, Cl. 427-340.000.

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Paul, Marius A.; and Paul Ana, 5,081,961, Cl. 123-51.00B.

Paul, Marius A.; and Paul Ana. Internal combustion engine with rotary exhaust control. 5,081,961, Cl. 123-51.00B.

Paulat, Annerose; and Wirth, Hans-Joachim, to SWF Auto-Electric GmbH. Lamp for motor vehicles including fog warning or backup lamp. 5,083,243, Cl. 362-61.000.

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Bastiaens, Alfons; and Pauwels, Norbert, 5,082,726, Cl. 428-313.300.

Pavlick, Michael J., to Transit America, Inc. Railroad car vertical isolator pad. 5,081,935, Cl. 105-224.100.

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Pecen, Jiri; Gross, Kenneth P.; Leslie, Brian; and Kren, George, to Tencor Instruments. Position location in surface scanning using interval timing between scan marks on test wafers. 5,083,035, Cl. 250-561.000.

Peiz, Peter: *See—*
Nagel, Gunther; Arbogast, Franz; and Peiz, Peter, 5,081,907, Cl. 91-497.000.

Pelfrey, Keith A., to Little Tikes Company, The. Basketball stand. 5,082,261, Cl. 273-1.50R.

Pellyfren AG: *See—*
Sule, Sandor, 5,082,093, Cl. 188-24.220.

Pemco Company: *See—*
Meives, Otis, 5,081,821, Cl. 53-466.000.

Pentel Kabushiki Kaisha: *See—*
Kazama, Mitsuo, 5,083,118, Cl. 340-706.000.

Performance Predictions, Inc.: *See—*
Chance, Britton, 5,081,991, Cl. 128-653.200.

Perillon, Jean-Luc: *See—*
Kappler, Patrick; and Perillon, Jean-Luc, 5,082,911, Cl. 526-249.000.

Peroxid-Chemie GmbH: *See—*
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Perry, Randal L.: *See—*
Mallouk, Robert S.; Branca, Phillip A.; and Perry, Randal L., 5,082,472, Cl. 55-16.000.

Persidsky, Maxim: *See—*
Borodulin, German; Persidsky, Maxim; and Shkolnik, Alexander, 5,081,985, Cl. 128-32.000.

Person, Dennis W.; Timte, Frank W.; Daubenmier, John A.; Zielke, John I.; Smith, Rodney B.; and Williams, Roy S., to Ford Motor Company. Automatic transaxle control system for an automotive vehicle. 5,081,886, Cl. 74-866.000.

Petajan, Eric D.: *See—*
Knauer, Scott C.; Netravali, Arun N.; Petajan, Eric D.; and Westerink, Peter H., 5,083,206, Cl. 358-141.000.

Peter Hartmann Beteiligungen AG: *See—*
Hartmann, Peter; and Bergmann, Bernhard, 5,082,614, Cl. 264-256.000.

Peterson, Benjamin R., to Fantasy Flavors, Inc. Nonfat frozen dairy dessert with method and premix therefor. 5,082,682, Cl. 426-564.000.

Peterson, Ronald C.; Jasperson, Keith E.; and Schilling, Robert J., to Minnesota Mining and Manufacturing Company. Multiple charge images initiation with scan synchronization. 5,083,140, Cl. 346-107.00A.

Petroleo Brasileiro, S.A.-Petrobras: *See—*
Macedo, Jose C. D., 5,082,815, Cl. 502-68.000.

Pettigrew, Thomas G., to Marshall and Williams Company. Apparatus for limiting the movement of tenter frame rails. 5,081,751, Cl. 26-91.000.

Pettijohn, Ted M., to Phillips Petroleum Company. Use of starch in the preparation of polymers. 5,082,882, Cl. 524-47.000.

Pettinato, David: *See—*
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Pfaudler-Werke AG: *See—*
Kohler, Werner; Reinhardt, Dieter; Gramlich, Hermann; Schertz, Reinhart; Weissmann, Karl; and Trampert, Rainer, 5,082,367, Cl. 356-73.000.

Pfiester, James R.; Baker, Frank K.; and Sivan, Richard D., to Motorola, Inc. Method of fabricating MOS transistors using selective polysilicon deposition. 5,082,794, Cl. 437-40.000.

Pfiester, James R., to Motorola, Inc. Shared gate CMOS transistor. 5,083,190, Cl. 357-42.000.

Pfister, Jurg: *See—*
Pascal, Jean-Claude; Patmore, Leslie; Pfister, Jurg; Blondet, Dominique; and Armstrong, John M., 5,082,847, Cl. 514-312.000.

Pfizer Inc.: *See*—
Braish, Tamim F., 5,082,970, Cl. 564-424.000.
Damiano, John; and Griffin, Richard C., 5,082,648, Cl. 423-598.000.
Fung, Fu-Ning, 5,082,684, Cl. 426-602.000.

PFU Limited: *See*—
Tsuchiya, Haruhiko, 5,083,260, Cl. 395-325.000.

Pharmacia LKB Biotechnology AB: *See*—
Fahnestock, Stephen R., 5,082,773, Cl. 435-69.100.

Phillips, Gerald W.: *See*—
Monnier, John R.; Godleski, Stephen A.; Low, Howard M.; McCullough, Laughlin G.; McGarry, Lynda W.; and Phillips, Gerald W., 5,082,956, Cl. 549-507.000.

Phillips Petroleum Company: *See*—
Olbrich, Michael E.; Jones, Rebecca L.; and Fenstermaker, Roger W., 5,082,987, Cl. 585-737.000.
Pettijohn, Ted M., 5,082,882, Cl. 524-47.000.

Phillips, Thomas S.; and Corso, Anthony J., to Hoechst Celanese Corporation. Process for the regiospecific sulfonation of sulfonyl substituted 2-aminonaphthalenes and fiber reactive azo dyes made from the products of said process. 5,082,963, Cl. 558-33.000.

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Picha, George J.; and Secrest, Dean J., to Applied Medical Technology, Inc. Biopsy forceps with calde controlled jaws. 5,082,000, Cl. 128-751.000.

Pidgeon, Peter N., to Ford Motor Company. Steering column assembly mounting bracket. 5,081,879, Cl. 74-492.000.

Pinza, Mario: *See*—
Farina, Carlo; Pinza, Mario; Cerri, Alberto; and Parravicini, Francesco, 5,082,939, Cl. 544-239.000.

Pioneer Electronic Corporation: *See*—
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Pioneer Hi-Bred International, Inc.: *See*—
Ambrose, William B.; and Kevern, Thomas C., 5,082,992, Cl. 800-200.000.
Cavanah, Jack A., 5,082,991, Cl. 800-200.000.

Piotrowski, Chester; Bruzzone, Charles L.; T050832716g-Long; and McAllister, Jerome W., to Minnesota Mining and Manufacturing Company. Multi-layer thin-film EAS marker. 5,083,112, Cl. 340-572.000.

Piotrowski, Matthew S. Illuminated underwater writing tablet. 5,083,242, Cl. 362-34.000.

Pirelli Armstrong Tire Corporation: *See*—
Gifford, James H., 5,082,713, Cl. 428-107.000.

Piretti, Carl P.: *See*—
Cartier, George E.; Piretti, Carl P.; and Simon, Robert H. M., 5,082,515, Cl. 156-212.000.

Pirzad, Ramin: *See*—
Newman, Jeffrey D.; Pirzad, Ramin; Cowell, David C.; and Dowman, Antony A., 5,082,540, Cl. 204-153.130.

Pisano, Robert R.: *See*—
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Pitel, Fabrice: *See*—
Beylat, Jean-Luc; Pitel, Fabrice; and Monnot, Michel, 5,082,376, Cl. 385-3.000.

Pitney Bowes Inc.: *See*—
Brigante, Mary-Jo F.; Guiles, Joseph W.; and Morabito, James, 5,082,255, Cl. 270-45.000.
Dolan, Donald T.; Durst, Robert T., Jr.; Hubbard, David W.; and Silverberg, Morton, 5,082,072, Cl. 177-25.150.
Mrozinski, Curtis, 5,081,825, Cl. 53-569.000.

Plantefeve, Jean-Claude: *See*—
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Plants, William C., to Advanced Micro Devices, Inc. Current regulator, threshold voltage generator. 5,083,079, Cl. 323-313.000.

Plasma Etch: *See*—
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Platteter, Dale T.; Westfall, Robert S.; and Carter, Jeff C., to Xerox Corporation. Process and apparatus for saving and restoring critical files on the disk memory of an electrostatographic reproduction machine. 5,083,264, Cl. 395-575.000.

Poclain Hydraulics: *See*—
Lemaire, Gilles; and Beeson, Douglas, 5,081,906, Cl. 91-491.000.

Poehlman, William F. S.; and Mesher, Darel E., to McMaster University. Environmental controller for a sealed structure. 5,082,173, Cl. 236-11.000.

Poerschke, Karl D., to Wickmann-Werke GmbH. Fuse holder. 5,082,458, Cl. 439-621.000.

Pohang Iron & Steel Co., Ltd.: *See*—
Ahn, Duk S.; Lee, Jae R.; and Park, Chan S., 5,082,748, Cl. 428-656.000.

Polacek, Manfred, to Wacker Corporation. Vibratory roller. 5,082,396, Cl. 404-117.000.

Pollak, George: *See*—
Strissel, Jerry; Pollak, George; and Kindiger, Bryan, 5,082,993, Cl. 800-200.000.

Pollock, Debra G.; and Nealy, Robert B. Restraining device. 5,082,220, Cl. 248-104.000.

Poloni, Alfredo, to Danieli & C. Officine Meccaniche SpA. Method to package sections and rotary packaging machine that employs the method. 5,081,818, Cl. 53-446.000.

Poly-Tec Products, Inc.: *See*—
Westhoff, James A.; Kelly, James A.; and Parker, James E., 5,081,802, Cl. 52-20.000.

Pommelet, Yves M. Building structure foundation system. 5,081,806, Cl. 52-167.00R.

Pons de Vall, Josep M. F.: *See*—
Baro, Josep M. R.; Giral, Salvador M.; and Pons de Vall, Josep M. F., 5,082,941, Cl. 544-358.000.

Popa, Jean-Michel; Guth, Jean-Luc; and Kessler, Henri, to Rhone-Poulenc Chimie. Novel silicon/titanium oxide MFI zeolites. 5,082,641, Cl. 423-326.000.

Portal, Guy: *See*—
Decossas, Jean-Louis; Vareille, Jean-Claude; Barthe, Jean; and Portal, Guy, 5,083,028, Cl. 250-390.030.

Porter, David P.: *See*—
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Porton Instruments, Inc.: *See*—
Farnsworth, Vincent R.; and Cartier, Paul K., III, 5,082,788, Cl. 436-89.000.

Poupard, Mark D.; and Cooper, Edward L., to Accubilt, Inc. Index table with center mounted robot arm. 5,083,070, Cl. 318-568.100.

Poux, Christopher J.; and Sinkus, Donald P., to Thomson Consumer Electronics, Inc. System for automatically loading and unloading articles coupled by cabling. 5,082,418, Cl. 414-736.000.

Powazinik, William: *See*—
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Powell, Clois E.: *See*—
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Prabhu, Ashok N.; and Hang, Kenneth W., to David Sarnoff Research Center, Inc. Thick film copper via fill inks. 5,082,804, Cl. 501-19.000.

Preato, Victor. Baseboard conductor humidifier. 5,082,176, Cl. 237-78.00A.

Preller, Robert E.; and Miedama, Donald L., to Sea-Land Service, Inc. Twenty foot container transporter. 5,082,304, Cl. 280-407.100.

Prescher, Guenter: *See*—
Boeck, Wolfgang; Arntz, Dietrich; Prescher, Guenter; and Burkhardt, Werner, 5,082,819, Cl. 502-212.000.

President and Fellows of Harvard College: *See*—
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Priest, Alfred R.: *See*—
Monus, Donald T., 5,081,954, Cl. 119-3.000.

Primary Delivery Systems, Inc.: *See*—
Weinstein, Jack, 5,082,130, Cl. 215-225.000.
Weinstein, Jack, 5,082,137, Cl. 220-346.000.

Primeaux, Dudley J., II: *See*—
Su, Wei-Yang; Primeaux, Dudley J., II; and Champion, Donald H., 5,082,917, Cl. 528-68.000.

Primus, Michael: *See*—
Frye, Gunter; Karius, Klaus-Dietmar; Kruse, Heinz-Josef; Sippel, Achim; Meyer, Jurgen; and Primus, Michael, 5,081,931, Cl. 102-489.000.

Prince Corporation: *See*—
Cekander, John W.; Redder, Doug J.; and Waldron, Chris R., 5,082,322, Cl. 296-97.900.

Process Bonding, Inc.: *See*—
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Protect-A-Boat of New Jersey, Inc.: *See*—
Talbot, James E., 5,081,911, Cl. 454-370.000.

Provence, Marc, to Salomon S. A. System for mounting guide ridge on cross-country ski. 5,082,410, Cl. 411-455.000.

Puckett, Dan K.: *See*—
Lee, Kam B.; Morgan, Allan C.; Richards, L. Willard; and Puckett, Dan K., 5,082,502, Cl. 134-1.000.

Puckett, Riley; and Bell, Wayne, to Pucketts Bloodtrailer Broadhead. Broadhead with deployable cutting blades. 5,082,292, Cl. 273-421.000.

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Pugnet, Jean-Marc, to Framatome. Device for controlling the operation of at least two thermal engines coupled to the same drive shaft of an alternator. 5,083,037, Cl. 290-4.00R.

Pulkowski, Jeffrey H.; Macklem, Elizabeth A.; and Busker, L. H., to Beloit Corporation. Heated extended nip press with porous roll layers. 5,082,533, Cl. 162-359.000.

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Dorris, Gilles, 5,082,526, Cl. 162-30.110.

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Bezos, Angel P.; and Fernandez, Emilio A., 5,083,274, Cl. 364-424.040.

Purdes, Andrew J.; and Celii, Francis G., to Texas Instruments Incorporated. Method for forming patterned diamond thin films. 5,082,522, Cl. 156-612.000.

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Cook, William A.; Fearnot, Neal E.; and Geddes, Leslie A., 5,081,988, Cl. 128-419.0PG.

Quadrax Corporation: *See*—
Craven, Paul t.; and Fisher, Richard A., 5,082,701, Cl. 428-34.500.

Quam, Roger C., to Waste-Not, Inc. Wastebasket divider. 5,082,139, Cl. 220-530.000.

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Quisenberry, Terry. One way animal gate. 5,081,958, Cl. 119-155.000.

Rabindran, K. George; Filicicchia, David; and Guenther, Kenneth L., to Bell & Howell Phillipsburg Co. Insertion machine with speed optimization. 5,083,281, Cl. 364-478.000.

Rackley, Robert L.: *See—*
Fish, Robert B., Jr.; Rackley, Robert L.; Anderson, Robert K.; and Mainz, Michael H., 5,082,610, Cl. 264-80.000.

Radford, Neal T.: *See—*
Willey, Alan P.; and Radford, Neal T., 5,082,544, Cl. 204-270.000.

Raevsky, Vitaly; Zlatkevich, Lev Y.; and Brown, Robert D., to Ad-Va-Cote Tri-State Inc. Heat insulating ablative-type materials. 5,082,877, Cl. 523-179.000.

Raghavan, Narashima S.: *See—*
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RainSoft Water Conditioning Co.: *See—*
Grayson, John R.; and Pettinato, David, 5,082,557, Cl. 210-109.000.

Rajanbabu, Thaliyil V.: *See—*
Nader, Allan E.; and Rajanbabu, Thaliyil V., 5,082,965, Cl. 558-270.000.

Ramsey, Douglas P. Self-sealing closure. 5,082,134, Cl. 220-711.000.

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Ranson, Janet H., to Akzo N.V. Leukoregulin, an antitumor lymphokine, and its therapeutic uses. 5,082,657, Cl. 424-85.100.

Rante, Anthony, to Connell Limited Partnership. Backlash reduction system for transfer feed press rail stands. 5,081,860, Cl. 72-405.000.

Rasmussen GmbH: *See—*
Sauer, Heinz, 5,082,315, Cl. 285-256.000.

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Saikkonen, Pekka J.; and Rastas, Jussi K., 5,082,638, Cl. 423-145.000.

Rathjen, Barbel: *See—*
Love, Graham; Schellhaass, Karl; Rathjen, Barbel; and Schwarz, Jurgen, 5,082,676, Cl. 426-79.000.

Rau, Bantwal R.; and Towle, Ross A., to Hewlett-Packard Company. Horizontal computer having register multiconnect for execution of an instruction loop with recurrance. 5,083,267, Cl. 395-375.000.

Raufast, Charles, to BP Chemicals Limited. Gas distribution plate for fluidization. 5,082,634, Cl. 422-143.000.

Rauh, Michael M.; and Worrell, Eugene H., to Nynex Corporation. Disk-shaped housing apparatus for receiving data storage devices. 5,082,131, Cl. 220-4.210.

Rausch, Georg, to Mannesmann Rexroth GmbH. Apparatus for providing relief to a working chamber. 5,081,902, Cl. 91-47.000.

Rausch, Wolfgang: *See—*
Schweder, Herbert; Lochl, Klaus; Rausch, Wolfgang; Hannemann, Freidrich; Leitmont, Helmut; Hahn, Ditmar; and Itziegehl, Kurt, 5,082,441, Cl. 432-75.000.

Rauseo, Anthony F.: *See—*
Schwarz, Frederick M.; Crawley, Clifton J., Jr.; and Rauseo, Anthony F., 5,081,830, Cl. 60-39.020.

Raviv, Avi, to Solmat Systems, Ltd. Method of and apparatus for controlling fluid leakage through soil. 5,082,397, Cl. 405-176.000.

Rawlings, John P.; and Albertson, Michael E. Ground source air conditioning system comprising a conduit array for de-icing a nearby surface. 5,081,848, Cl. 62-260.000.

Razouk, Reda R.: *See—*
El-Diwany, Monir H.; Brassington, Michael P.; and Razouk, Reda R., 5,082,796, Cl. 437-44.000.

RCA Thomson Licensing Corporation: *See—*
Haferl, Peter E.; and Sauder, Thomas H., 5,083,198, Cl. 358-32.000.

Re Partnership, The: *See—*
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Read Corporation, The: *See—*
Read, James L., 5,082,555, Cl. 209-244.000.

Read, James L., to Read Corporation, The. Soil feeding apparatus and method. 5,082,555, Cl. 209-244.000.

Ream, Michael D.; and Claxton, Gerald L., to Up-Right, Inc. Platform leveling apparatus. 5,082,085, Cl. 182-2.000.

Reaoch, Ronald S.: *See—*
Burns, Gary T.; Fontaine, Leslie D.; and Reaoch, Ronald S., 5,082,872, Cl. 522-77.000.

Rebel, Herbert: *See—*
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Redder, Doug J.: *See—*
Cekander, John W.; Redder, Doug J.; and Waldron, Chris R., 5,082,322, Cl. 296-97.900.

Reddy, Alla V. K. Prophylactic with glans penis stimulation. 5,082,004, Cl. 128-844.000.

Reed, J. Don. Golf swing analysis device. 5,082,284, Cl. 273-186.00E.

Reed, John J.: *See—*
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Reese, Martin W. Separator, float shut-off valve, and orifice meter mounted as a unit of skid. 5,082,556, Cl. 210-90.000.

Refurbished Turbine Components Limited: *See—*
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Reich, Jack W.: *See—*
Gruber, Harry E.; Browne, Clinton E.; Vgarkar, Bheemaro G.; and Reich, Jack W., 5,082,829, Cl. 514-43.000.

Reich, Ronald S.: *See—*
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Reichert, Hans: *See—*
Kreitner, Ludwig; Grau, Werner; Lehner, August; Reichert, Hans; Sommermann, Friedrich; Schneider, Norbert; and Erhardt, Gerd, 5,082,689, Cl. 427-128.000.

Reichmuth, Hugo, to Inventio AG. Escalator safety apparatus. 5,082,102, Cl. 198-333.000.

Reichner, Philip, to Westinghouse Electric Corp. Internal natural gas reformer-dividers for a solid oxide fuel cell generator configuration. 5,082,751, Cl. 429-19.000.

Reid, Allen F.: *See—*
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Reid, Donald M.: *See—*
Badyal, Rajeev; Mahjouri, Sam; Reid, Donald M.; and Gilsdorf, Michael J., 5,083,137, Cl. 346-1.100.

Reid, Philip L., to Modern Controls, Inc. Apparatus for measuring transmission of volatile substances through films. 5,081,863, Cl. 73-38.000.

Reil, Axel; Scherer, Rolf; Starke, Jorg; Ghiotte, Renzo; and Lovisetto, Primo, to KSB Aktiengesellschaft. Centrifugal pump impeller. 5,082,425, Cl. 416-188.000.

Reilly, Paul E.; Fleysher, Daniel; Rulli, Paul A.; and Latone, Jack T., to Xerox Corporation. Elimination of contouring on displayed gray level images. 5,083,210, Cl. 358-298.000.

Reinecke, Paul: *See—*
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Reiners, Jurgen: *See—*
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Reinhardt, Dieter: *See—*
Kohler, Werner; Reinhardt, Dieter; Gramlich, Hermann; Schertz, Reinhart; Weissmann, Karl; and Trampert, Rainer, 5,082,367, Cl. 356-73.000.

Reinhart, Susan B.: *See—*
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Reinsch, Roger A. Video signal digitizer. 5,083,313, Cl. 382-8.000.

Reisberg, Barry: *See—*
Sclan, Steven G.; and Reisberg, Barry, 5,082,446, Cl. 434-236.000.

Reiser, Carl; and Sawyer, Richard. Fog-resistant mirror assembly. 5,083,009, Cl. 219-219.000.

Rene, Michel; and Plantefeve, Jean-Claude, to Laboratoires Beaufour. Process for preparing soluble and/or splitable tablets and tablets thus obtained. 5,082,666, Cl. 424-467.000.

Renk, Richard J.; Boller, George E.; and Ebert, Richard M., to Mackay, Carol Ann; and Kurtz, Helen Lou. Traction motor suspension bearing lubricator. 5,082,089, Cl. 184-64.000.

Republic Tool & Manufacturing Corp.: *See—*
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Rerat, Carlos F., to V Tech Corporation. Tantalum powder with improved capacitor anode processing characteristics. 5,082,491, Cl. 75-255.000.

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Reverente, Jessie P.: *See—*
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Revis, Anthony; and Campbell, William H., to Dow Corning Corporation. Process of curing methylhydrosiloxanes. 5,082,735, Cl. 428-412.000.

Revlon, Inc.: *See—*
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Revtai, George: *See—*
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Reynolds, Bruce E.; Bea, Donald A.; and Bachtel, Robert W., to Chevron Research and Technology Company. Hydroconversion effluent separation process. 5,082,551, Cl. 208-100.000.

Reynolds, Henry B. Ceiling devices. 5,081,812, Cl. 52-484.000.

Rha, ChoKyun: *See—*
Jamas, Spiros; Rha, ChoKyun; and Sinskey, Anthony J., 5,082,936, Cl. 536-123.000.

Rhee, Yong S. Fly catcher device and method. 5,081,789, Cl. 43-134.000.

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Frye, Gunter; Karius, Klaus-Dietmar; Kruse, Heinz-Josef; Sippei, Achim; Meyer, Jurgen; and Primus, Michael, 5,081,931, Cl. 102-489.000.

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Rhoades, Clark J.; and Gambuti, Stephen J. Portable pressurized pulsed oralcavity cleaner. 5,082,444, Cl. 433-80.000.

Rhoades, Gary V.; and Francis, John, to Imperial Chemical Industries PLC. Receiver sheet. 5,082,824, Cl. 503-227.000.

Rhone-Poulenc Agrochimie: *See—*
Wakselman, Claude; Tordeux, Marc; Langlois, Bernard; Clavel, Jean-Louis; and Nantermet, Roland, 5,082,945, Cl. 548-110.000.

Rhone-Poulenc Chimie: *See—*
Araud, Claude, 5,082,590, Cl. 252-321.000.

Gubelmann, Michel; and Allandrieu, Christian, 5,082,978, Cl. 568-637.000.
Marchetto, Antonio; Mascheroni, Anghelito; and Ruffo, Georges, 5,082,591, Cl. 252-351.000.
Popa, Jean-Michel; Guth, Jean-Luc; and Kessler, Henri, 5,082,641, Cl. 423-326.000.

Rhone Poulenc Nutrition Animale: *See*—
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Rhyne, George W., to Motorola, Inc. Fluid index of refraction sensor. 5,083,018, Cl. 250-227.250.

Ribalta Baro, Josep M.; Oranias Olsina, Gloria; and Campon Pardo, Julio, to Esteve Quimica, S.A. Industrial process for obtaining an aryloxypropanolamine. 5,082,969, Cl. 564-349.000.

Riboulleau, Michel, to Ateliers Riboulleau. Distributor for a monoseed sowing machine. 5,082,126, Cl. 221-211.000.

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Rich, Christopher C.: *See*—
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Richards, L. Willard: *See*—
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Richardson, Robert D.; and Erdman, William L., to U.S. Windpower, Inc. Variable speed wind turbine. 5,083,039, Cl. 290-44.000.

Richmond, James W., to Emerson Electric Co. Quiet water valve. 5,082,240, Cl. 251-120.000.

Richter Gedeon Vegyeszeti Gyar R.T.: *See*—
Molnar, Csaba; Hajos, Gyorgy; Szporny, Laszlo; Toth, Jozsef; Kiraly, Arpad; Boor nee Mezei, Anna; Csorgei, Janos; Szekely, Kristina; Forgacs, Lilla; Fekete, Gyorgy; Herenyi, Bulcsu; Holly, Sandor; and Szunyog, Jozsef, 5,082,835, Cl. 514-180.000.

Ricoh Company, Ltd.: *See*—
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Suzuki, Kohji; Masumura, Masao; Oyama, Hajime; and Namekata, Shinichi, 5,083,160, Cl. 355-208.000.
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Rindlisbacher, Alfred: *See*—
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Rinehart, Ronald K.; and Johnson, Chris. Double wall steel tank. 5,081,761, Cl. 29-428.000.

Ringesten, Bjorn; Berge, Olay; and Berntsson, Leif. Method for forming road and ground constructions. 5,082,393, Cl. 404-28.000.

Rintala, Kari; Paarma, Jyrki; Sissala, Mikko; Valkonen, Ilkka; and Kokko, Pekka, to Kone Oy. Device for separating hard objects, such as stones, from a stream of wood. 5,082,118, Cl. 209-599.000.

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Rishpon, Judith; Zawodzinski, Thomas A.; and Gottesfeld, Shimshon, to United States of America, Energy. Enzyme electrochemical sensor electrode and method of making it. 5,082,550, Cl. 204-403.000.

Riso Kagaku Corporation: *See*—
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Rittal-Werk Rudolf Loh GmbH & Co. KG: *See*—
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Robert Bosch GmbH: *See*—
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Robert Krups Stiftung & Co. KG.: *See*—
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Robert, Roderick C.: *See*—
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Robinson, Alan: *See*—
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Robinson, Andrew J.; Gerstung, Carl H.; and Tournaud, Alexis J., to Gas Technology Resources Flotron, Incorporated. Fluid mixing device. 5,082,372, Cl. 366-167.000.

Robinson, Randolph W.; and Weitz, John-Willi. Fishing rod lighting system. 5,083,247, Cl. 362-109.000.

Rochester Midland Corporation: *See*—
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Rockefeller University, The: *See*—
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Rockwell International Corporation: *See*—
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Rodi, Anton, to Heidelberger Druckmaschinen AG. Method and apparatus for the rapid establishment of an ink zone profile in an offset printing press. 5,081,926, Cl. 101-211.000.

Roegels, Stephan: *See*—
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Rogers, Norman H.: *See*—
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Rohde, Larry A.; Hall, Mark R.; Kroeger, Edward; and Sutherland, Joyce E., to Canada Packers Inc. Apparatus for selecting, capturing and probing food products. 5,082,373, Cl. 374-155.000.

Rohrlach, Milo L.; and Hall, William J., to Bridgestone Australia Ltd. Method of forming a moulded panel. 5,082,609, Cl. 264-46.400.

Roller, Hermann: *See*—
Bobrich, Michael; Roller, Hermann; Lehner, August; Keppeler, Uwe; Suettinger, Rudolf; Loch, Werner; Lenz, Werner; and Schulz, Guenther, 5,082,737, Cl. 428-425.900.

Rolls-Royce plc: *See*—
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Shutler, Arthur G., 5,083,277, Cl. 364-431.020.
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Roman, Francois J.: *See*—
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Romano, Antonio, to Campagnolo S.r.l. Device for attaching a shoe to a bicycle pedal. 5,081,883, Cl. 74-594.600.

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Romeo, Silvano A.: *See*—
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Romick, Jerome M. Unit-dose medication handling and dispensing system with signalling tabs and flap. 5,082,113, Cl. 206-459.000.

Rommi, Vesa: *See*—
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Rose, Richard S.: *See*—
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Rosen, David B. Dental crown analog for orthodontic anchorage. 5,082,442, Cl. 433-17.000.

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Rosendal, Timo: *See*—
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Ross, Colin F.: *See*—
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Ross, Jeffrey L.; and Krueger, James W., to FMC Corporation. Computer controlled light contact feeder employing four independently driven conveyors. 5,082,103, Cl. 198-460.000.

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Rostik, Libor F.: *See*—
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Roth, Steven. Pipe hanger assembly. 5,082,216, Cl. 248-62.000.

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Rotman, Frederic; Rancon, Yannick; Queille, Philippe; and Olivier, Michel, to L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation des Procedes Georges Claude. Process for producing ceramic-metal multilayer components and apparatus for carrying out the process. 5,082,606, Cl. 264-40.600.

Rottman, Fritz; and Helms, Sherron, to Edison Animal Biotechnology Center/Ohio University. Method of directing transgenic expression in animals using a prolactin promoter. 5,082,779, Cl. 435-172.300.

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Roy, Donald W.; Hastert, James L.; Green, Kenneth E.; Courbrough, Lawrence E.; and Trujillo, Aurielo, to Coors Porcelain Company.

Metallized spinel with high transmittance and process for producing. 5,082,739, Cl. 428-450.000.
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Rudd, Brodie W., Jr.; and Hannah, James K., to C&M Company. Device for controlling the discharge of a bale from a solid waste baling machine. 5,081,922, Cl. 100-50.000.
Rudd, Eric J.: *See*—
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Rumaner, Lee E.; Benz, Mark G.; and Knudsen, Bruce A., to General Electric Company. Method of forming superconducting joint between superconducting tapes. 5,082,164, Cl. 228-176.000.
Russell, James T. Rf modulated optical beam distance measuring system and method. 5,082,364, Cl. 356-5.000.
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Ryan, Paul; Tse, Eric K. Y.; and Lo, Carlo K. L., to Saitek Limited. Sensory games. 5,082,286, Cl. 273-238.000.
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Whatley, Roger A.; and Rybicki, Mathew A., 5,083,051, Cl. 307-571.000.
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Saba, Don; Glass, Richard S.; and Yabusaki, Kenichi K., to Naxcor. Coumarin derivatives for use as nucleotide crosslinking reagents. 5,082,934, Cl. 536-17.600.
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Boundy, Jeffrey W., 5,082,022, Cl. 137-624.120.
Sacripante, Guerino; McAneney, T. Brian; Drappel, Stephan; Van Kao, Sheau; and Alexandru, Lupu, to Xerox Corporation. Crosslinked thermotropic liquid crystalling polyarylate. 5,082,919, Cl. 528-176.000.
Sadano, Yutaka; Nakashima, Yuuji; Tanaka, Takashi; Kawasaki, Takatoshi; Shibata, Shinji; Aoyagi, Hikaru; Nishizawa, Yoshio; and Kasahara, Akihiko, to Nippon Steel Corporation; Toyota Jidosha Kabushiki Kaisha; and Nippon Kinzoku Co., Ltd. Method of soldering honeycomb body. 5,082,167, Cl. 228-258.000.
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Saidman, Laurence B.; and Smith, James C., to Nordson Corporation. Method and apparatus for applying non-chemically foamed multicomponent curable polymers. 5,082,142, Cl. 222-1.000.
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Saikkonen, Pekka J.; and Rastas, Jussi K. Process of recovering non-ferrous metal values, especially nickel, cobalt, copper and zinc, by using melt and melt coating sulphation, from raw materials containing said metals. 5,082,638, Cl. 423-145.000.
Saimoto, Tetsuro, to Yazaki Corporation. Busbar interconnecting structure. 5,082,463, Cl. 439-883.000.
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Bravet, Jean-Louis; and Daude, Gerard, 5,082,736, Cl. 428-425.600.
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Ryan, Paul; Tse, Eric K. Y.; and Lo, Carlo K. L., 5,082,286, Cl. 273-238.000.
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Saito, Hiroshi; and Inagaki, Michihiro, to Nichias Corporation. Material for gasket. 5,082,725, Cl. 428-304.400.
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Saito, Tsukasa; Kiriyama, Hiroshi; and Noguchi, Toshiaki, to Sony Corporation. Reel table shifting device. 5,082,195, Cl. 242-199.000.
Saitou, Toshihiko; Yamashita, Takashi; Ishii, Kenichi; Ogawa, Masanobu; Shibata, Shinya; Oda, Kenji; and Kume, Masaharu, to Asahi Glass Company Ltd. Antenna device for an automobile. 5,083,134, Cl. 343-713.000.
Saji, Tetsuo; and Hoshino, Katsuyoshi, to Idemitsu Kosan Company Limited. Ferrocene compounds and uses thereof. 5,082,539, Cl. 205-162.000.
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Takagi, Hiroshi; Mori, Yoshiaki; and Sakabe, Yukio, 5,082,593, Cl. 252-397.000.
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Tomita, Atsushi; and Sakaguchi, Katsuyoshi, 5,082,434, Cl. 425-28.100.
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Fukushima, Akira; Makino, Nobuhiko; Uchida, Kiyoyuki; Inoue, Hideo; and Sakai, Kazunori, 5,082,333, Cl. 303-96.000.
Sakai, Kunito, to Mitsubishi Denki Kabushiki Kaisha. Method for packaging semiconductor devices in a resin. 5,082,615, Cl. 264-510.000.
Sakama, Masao: *See*—
Hiyoshi, Teruo; Suzuki, Hideo; Aoki, Eiichiro; Nakada, Akira; Kumano, Shinji; Watanabe, Kunihiko; and Sakama, Masao, 5,081,896, Cl. 84-600.000.
Sakamoto, Makoto: *See*—
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Sakamoto, Mitsuo, to Sony Corporation. Thermal head formed of a flat cable encapsulated in a supporting body. 5,083,139, Cl. 346-76.0PH.
Sakata, Masao; Segoshi, Toru; Futami, Tohru; and Iijima, Yoichi, to Nissan Motor Co., Ltd. Lighting device for electric discharge lamp. 5,083,065, Cl. 315-307.000.
Sakaue, Makoto, to Mitsubishi Denki K.K. Wire cut type electric discharge machining method and apparatus. 5,083,000, Cl. 219-69.120.
Sakuma, Tadashi: *See*—
Sekido, Hiroshi; Sakuma, Tadashi; and Hioki, Toshimichi, 5,082,326, Cl. 297-284.00R.
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Sakurai, Masao: *See*—
Wolf, Erhard; Gebert, Ulrich; Furrer, Harald; Tanaka, Toshizo; Sakurai, Masao; and Goto, Masayoshi, 5,082,845, Cl. 514-263.000.
Sakurai, Ushio: *See*—
Umeda, Takashi; Kanemitsu, Norihiro; Murakami, Kousuke; Takahara, Kuniaki; and Sakurai, Ushio, 5,082,078, Cl. 180-90.000.
Salinger, Jorge D.: *See*—
Andreotti, Peter E.; Morse, Irwin S.; Thornthwaite, Jerry T.; Heimer, Malcolm L.; Salinger, Jorge D.; and Sobodowski, Joseph J., 5,082,628, Cl. 422-82.080.
Salomon S. A.: *See*—
Provence, Marc, 5,082,410, Cl. 411-455.000.
Salvador, Jerry A. Sling for shoulder-fired weapons. 5,082,155, Cl. 224-150.000.
Salyer, Amy L., to Ear Resistible Ideas, Inc. Adhesively securable postless earring. 5,081,853, Cl. 63-12.000.
Sameshima, Masaru: *See*—
Kuroda, Takashi; Yamada, Kazuhiro; Ishibashi, Tadao; Hayashida, Suetou; Kimura, Kyoichiro; and Sameshima, Masaru, 5,082,900, Cl. 525-211.000.
Samson, Jean-Paul, to Bombardier, Inc. Speedometer conversion. 5,081,868, Cl. 73-532.000.
SamSung Electron Devices Co., Ltd.: *See*—
Kim, Min S., 5,083,057, Cl. 313-479.000.
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Ko, Jung-Wan; and Patel, Chandrakant B., 5,083,197, Cl. 358-19.000.
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Song, Jin Il, 5,083,072, Cl. 318-571.000.
Yim, Young-Ho; and Do, Jae-Young, 5,083,045, Cl. 307-350.000.
Sanborn, Charles H., III, to Ark, Inc. Automatic feeder for workpieces of limp material. 5,082,267, Cl. 271-10.000.
Sanchez, Richard D. Training device for baseball batter and method therefor. 5,082,262, Cl. 273-26.00R.
Sanden Corporation: *See*—
Ando, Nobuyasu, 5,082,051, Cl. 165-110.000.
Kikuchi, Kazuto, 5,082,432, Cl. 418-55.500.
Sanders, Robert N.: *See*—
Laurent, Sebastian M.; and Sanders, Robert N., 5,082,662, Cl. 424-442.000.
Sandford, Reginald E.; and Alexander, Robert R., to Re Partnership, The. Floor scraping machine. 5,081,734, Cl. 15-93.100.

Sandoz Ltd.: *See—*
Houlihan, William J., 5,082,846, Cl. 514-277.000.
Schooley, David A.; Kataoka, Hiroshi; and Kramer, Steven J., 5,082,828, Cl. 514-12.000.
Sands, Robert E.: *See—*
Stanley, M. Dale; Brownlow, Robert D.; Rice, John R.; and Sands, Robert E., 5,082,246, Cl. 251-315.000.
Sandvik AB: *See—*
Berglund, Goran; Lyen, Gosta; and Westberg, Torsten, 5,082,243, Cl. 251-144.000.
Sankosha Corporation: *See—*
Hayashi, Yutaka; Sato, Masaaki; Muramatsu, Yuji; Yoshihara, Hirofumi; and Hasegawa, Teiji, 5,083,185, Cl. 357-38.000.
Sano, Kuinio: *See—*
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Sanofi: *See—*
Garcia, Georges; Malta, Alain D.; and Soubrie, Philippe, 5,082,858, Cl. 514-456.000.
Santel, Hans-Joachim: *See—*
Muller, Klaus-Helmut; Findeisen, Kurt; Haug, Michael; Heinemann, Ulrich; Kluth, Joachim; Konig, Klaus; Santel, Hans-Joachim; Lurssen, Klaus; and Schmidt, Robert R., 5,082,490, Cl. 71-92.000.
Santen Pharmaceutical Co., Ltd.: *See—*
Morita, Takakazu; Iso, Tadashi; Mita, Shiro; and Kawashima, Youichi, 5,082,836, Cl. 514-183.000.
Santilli, Albert N.: *See—*
Corbitt, John D., Jr.; Kuzmick, Kenneth M.; O'Hearn, Stephanie L.; and Santilli, Albert N., 5,082,111, Cl. 206-363.000.
Santoro, Robert L., to J.A.D. Enterprises of New York, Inc. Credit card dispensing and positioning apparatus. 5,082,268, Cl. 271-14.000.
Santucci, Nelo J., deceased; Lucich, John; and by Lucich, Delores, executrix. Fishing lure retrieval apparatus. 5,081,784, Cl. 43-17.200.
Sanyo Electric Co., Ltd.: *See—*
Yasuda, Yuzou, 5,083,213, Cl. 358-326.000.
Sapre, Ajit V.: *See—*
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Sapsford, Gary S.; and Robinson, Alan, to STC PLC. Contactless measurement of the electrical resistance per unit length of filaments. 5,083,090, Cl. 324-632.000.
Sarcmi S.P.A.: *See—*
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Sartorius AG: *See—*
Stadler, Eberhard; and Eger, Matthias, 5,082,073, Cl. 177-212.000.
Sasaki, Kensuke, to Housei Ttekou Co., Ltd. Self-locking nut mechanism. 5,081,811, Cl. 52-227.000.
Sasaki, Koki: *See—*
Kuroda, Kenji; and Sasaki, Koki, 5,083,289, Cl. 364-557.000.
Sasaki, Michiaki; Yamamoto, Kiyokazu; and Matsuki, Toshiyuki, to Nissan Motor Company, Limited; and Jidosha Denki Kogyo Kabushiki Kaisha. Jet pump structure for a fuel tank. 5,082,426, Cl. 417-198.000.
Sasaki, Takako: *See—*
Yasuda, Kikuo; Shibata, Kenyu; Minami, Nobuyoshi; Seki, Toshimi; Shiraiwa, Masafumi; Nakao, Tomio; Miyasaka, Katsuhiko; Ishimori, Tsutomu; Gotanda, Kotaro; and Sasaki, Takako, 5,082,844, Cl. 514-253.000.
Sasaki, Takao; Fujibayashi, Kentaro; and Sato, Morimasa, to Fanuc Ltd. Spindle control system. 5,083,071, Cl. 318-569.000.
Sato, Atsushi; Kawakami, Shigenobu; Endo, Keiji; and Dohi, Hideyuki, to Nippon Petrochemicals Company, Limited. Electrical insulating oil composition and capacitors prepared therewith. 5,081,757, Cl. 29-25.410.
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Sato, Fumiaki: *See—*
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Sato, Kuniaki: *See—*
Matsuo, Hideshige; Yamamoto, Isamu; Itoh, Michio; Sato, Kuniaki; Nakamura, Yoshihiro; Tomita, Akia; and Mihara, Yoshiki, 5,082,166, Cl. 228-189.000.
Sato, Makoto; and Inagaki, Hiromi, to Honda Giken Kogyo Kabushiki Kaisha. Electromagnetically operated control system. 5,083,075, Cl. 318-640.000.
Sato, Masaaki: *See—*
Hayashi, Yutaka; Sato, Masaaki; Muramatsu, Yuji; Yoshihara, Hirofumi; and Hasegawa, Teiji, 5,083,185, Cl. 357-38.000.
Sato, Morimasa: *See—*
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Sato, Susumu; Wakamiya, Koichi; and Ohshita, Koichi, to Nikon Corporation. Compound zoom lens. 5,082,360, Cl. 359-675.000.
Sato, Takeshi: *See—*
Kawasaki, Schuichi; Yamazaki, Nobuo; and Sato, Takeshi, 5,081,996, Cl. 128-661.090.
Sato, Toshiyuki; Hashimoto, Hiroyuki; and Watanabe, Kazuo, to Dai Nippon Insatsu Kabushiki Kaisha. Vacuum contact printing device and exposure apparatus and original contact device. 5,083,156, Cl. 355-91.000.
Satoh, Takateru; Tanaka, Kimio; Shiba, Haruo; Uemura, Noboru; and Akaoka, Kenkichi, to TDK Corporation. Tape cassette. 5,082,197, Cl. 242-199.000.
Sattelmayer, Thomas: *See—*
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Satterfield, Marshall G.; Steinke, David M.; and Blankenship, Michael, to Process Bonding, Inc. Headliner. 5,082,716, Cl. 428-175.000.
Sauder, Thomas H.: *See—*
Haferl, Peter E.; and Sauder, Thomas H., 5,083,198, Cl. 358-32.000.
Sauer, Heinz, to Rasmussen GmbH. Hose coupling. 5,082,315, Cl. 285-256.000.
Saunders, David R. Playpen with detachable sides used as security gates. 5,081,723, Cl. 5-100.000.
Sawa, Eiji: *See—*
Fukuda, Hiroya; Akou, Masayuki; Sawa, Eiji; and Ohashi, Takashi, 5,082,870, Cl. 521-159.000.
Sawada, Kenji: *See—*
Sawada, Shigeru; Maruyama, Mitsuaki; Sawada, Kenji; Nakagawa, Hitoshi; Tsujimoto, Jun; Kasai, Shinichi; Takeshita, Masahiko; Kaneta, Satoshi; Koiwai, Masahiro; and Niki, Hiroshi, 5,083,170, Cl. 355-319.000.
Sawada, Kohei: *See—*
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Sawada, Shigeru; Maruyama, Mitsuaki; Sawada, Kenji; Nakagawa, Hitoshi; Tsujimoto, Jun; Kasai, Shinichi; Takeshita, Masahiko; Kaneta, Satoshi; Koiwai, Masahiro; and Niki, Hiroshi, to Seiko Epson Corporation. Electrophotographic recording apparatus. 5,083,170, Cl. 355-319.000.
Sawaya, Hiromichi, to Kabushiki Kaisha Toshiba. Resin-sealed type IC device. 5,083,189, Cl. 357-72.000.
Sawyer, Craig D., to General Electric Company. Passive heat removal from nuclear reactor containment. 5,082,619, Cl. 376-283.000.
Sawyer, Lawrence H.; White, Marvin A.; and Knight, George W., to Dow Chemical Company, The. Maleic anhydride-grafted polyolefin fibers. 5,082,899, Cl. 525-74.000.
Sawyer, Richard: *See—*
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Saxod, Jean-Bernard: *See—*
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Sayyadi, Babak, to Boeing Company, The. Sequencing machine and method. 5,082,521, Cl. 156-552.000.
Scanlan, Larry A.: *See—*
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Schadt, Martin: *See—*
Buchecker, Richard; Fromm, Hans-Jurgen; Kelly, Stephen; and Schadt, Martin, 5,082,589, Cl. 252-299.630.
Schaeffer, Riley O.: *See—*
Paine, Robert T., Jr.; Narula, Chaitanya K.; and Schaeffer, Riley O., 5,082,693, Cl. 427-226.000.
Schaerer, Andre J., to Allgemeine Synthetische Gesellschaft Etablissement. Method and apparatus for winding round the stem of a button sewn onto an article of clothing. 5,082,151, Cl. 223-1.000.
Schaffer, Ronald R.: *See—*
Mulholland, Denis G.; Schaffer, Ronald R.; and Warner, Gary N., 5,082,344, Cl. 385-60.000.
Schanne, Nancy E. Traveling card table. 5,082,116, Cl. 206-579.000.
Schaumberg, P. Leslie: *See—*
McElroy, John W.; and Schaumberg, P. Leslie, 5,083,109, Cl. 340-522.000.
Schechter, Stuart E.; and Leyenaar, Antonio R., to United States of America, Air Force. Center of gravity locating method. 5,081,865, Cl. 73-65.000.
Scheel, Jerry L.: *See—*
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Scheib, John R. Firefighting water delivery system and method. 5,082,013, Cl. 137-1.000.
Scheinpflug, Hans: *See—*
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Scheler, Siegfried: *See—*
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Schellhaass, Karl: *See—*
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Schering Corporation: *See—*
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Kohler, Werner; Reinhardt, Dieter; Gramlich, Hermann; Schertz, Reinhart; Weissmann, Karl; and Trampert, Rainer, 5,082,367, Cl. 356-73.000.
Schiel, Christian, to J.M. Voith GmbH. Vibration damping in a roll. 5,081,759, Cl. 29-116.100.
Schiller, Mikael A. W.; Melin, Per A.; and Edlund, Leif E., to Aktiebolaget Electrolux. Motor speed signal transmitter for a vacuum cleaner. 5,081,738, Cl. 15-339.000.
Schilling, Curtis L., Jr., to Union Carbide Chemicals and Plastics Technology Corporation. Sterically hindered aminohydrocarbylsilanes and process of preparation. 5,082,962, Cl. 556-479.000.

Schilling, Jeffrey: *See*—
Grosz, Clifford C.; and Schilling, Jeffrey, 5,082,413, Cl. 414-24.500.
Schilling, Robert J.: *See*—
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Schlumberger Industries: *See*—
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Schmatelka, Bernhard: *See*—
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Schmeissner, Ursula: *See*—
Ernst, Joachim F.; and Schmeissner, Ursula, 5,082,783, Cl. 435-69.100.
Schmelzle, Lloyd M.: *See*—
Forward, Gordon E.; Rostik, Libor F.; and Schmelzle, Lloyd M., 5,082,746, Cl. 428-582.000.
Schmidt, John K., to Ogden Martin Systems, Inc. Ash vibration process and apparatus. 5,082,572, Cl. 210-744.000.
Schmidt, Robert R.: *See*—
Muller, Klaus-Helmut; Findeisen, Kurt; Haug, Michael; Heinemann, Ulrich; Kluth, Joachim; Konig, Klaus; Santel, Hans-Joachim; Lurssen, Klaus; and Schmidt, Robert R., 5,082,490, Cl. 71-92.000.
Schmitz, Hans-Joachim: *See*—
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Schmutz, Lawrence: *See*—
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Schneiter, John L., to General Electric Company. Zoom lens for a variable depth range camera. 5,082,362, Cl. 356-1.000.
Schoenborn, Philippe: *See*—
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Schoeps, Knut C., to Atlas Copco Tools AB. Torque impulse delivering power tool. 5,082,066, Cl. 173-12.000.
Scholl, Stephen R.: *See*—
Valentine, Michael D.; Groth, Clarence R.; Scholl, Stephen R.; and Nusair, Marwan E., 5,083,129, Cl. 342-20.000.
Schon, Monsieur W., to Valeo Systemes d'Essuyage. Streamlined windshield wiper with shock absorber. 5,081,736, Cl. 15-250.350.
Schonwalder, Karl-Heinz: *See*—
Leupold, Ernst I.; Schonwalder, Karl-Heinz; Fritsche-Lang, Wolfram; Linkies, Adolf; Gohla, Werner; and Dany, Franz-Josef, 5,082,504, Cl. 134-42.000.
Schooley, David A.; Kataoka, Hiroshi; and Kramer, Steven J., to Sandoz Ltd. Eclosion hormone peptides. 5,082,828, Cl. 514-12.000.
Schrack Electronica LTDA.: *See*—
Bassino, Walter, 5,083,104, Cl. 335-128.000.
Schramm, William L., Jr. Automatic control system for accurately dispensing mixed drinks. 5,082,143, Cl. 222-66.000.
Schreurs, Emile: *See*—
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Schroder, Georg: *See*—
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Schroeder, Daniel R.; Lam, Kin S.; Hesler, Grace A.; Gustavson, Donald R.; Tomita, Koji; and Berry, Ronald L., to Bristol-Myers Squibb Co. Antitumor antibiotic BMY-42448. 5,082,933, Cl. 536-16.800.
Schroeders, Manfred: *See*—
Langen, Manfred; Gebald, Gregor; Inger, Siegfried; and Schroeders, Manfred, 5,082,192, Cl. 242-18.00R.
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Bachem, Henning; Schroder, Georg; Suling, Carlhans; Reiners, Jurgen; Muszik, Janos; Arlt, Dieter; Jautelat, Manfred; and Schroer, Wolf-Dieter, 5,082,527, Cl. 162-164.300.
Schubert, Ulrich; and Rose, Klaus, to Fraunhofer-Gesellschaft zur Forderung der Angewandten Forschung E.V. Process and catalyst for the conversion of CO/H_2O mixtures. 5,082,643, Cl. 423-415.00R.
Schue, Carolyn: *See*—
DeRespiris, Donald L.; Rudd, Eric J.; and Schue, Carolyn, 5,082,538, Cl. 205-140.000.
Schulte, John P.: *See*—
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Schultheiss, Reiner: *See*—
Wess, Othmar; Novak, Pavel; Mechnich, Klaus; and Schultheiss, Reiner, 5,081,984, Cl. 128-24.0EL.
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Shedd, Aaron N.; and Shedd, Mary E. Headgear attachment. 5,081,717, Cl. 2-199.000.
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Wang, Pen C., 5,082,923, Cl. 528-323.000.
Shen, Jian-Chyun, to Union Oil Company of California. Well preflush fluid. 5,082,499, Cl. 106-735.000.
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Shiba, Haruo: *See*—
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Shiratori, Hidehisa; and Nakayama, Masaaki, to Mitsubishi Materials Corporation. Insert rotary cutter. 5,082,400, Cl. 407-42.000.
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Simm, Wolfgang; and Steine, Hans-Theo, to Castolin S.A. Method of flame-spraying of powdered materials and flame-spraying apparatus for carrying out that method. 5,082,179, Cl. 239-80.000.
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Singer, Shmuel. Osteointegrated implants and dental implant assemblies. 5,082,445, Cl. 433-169.000.
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Skaryd, Peter; and Skaryd, Norma. Method of elongating hair. 5,082,010, Cl. 132-201.000.
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Smith, Garland Y. Pipeline plugger. 5,082,026, Cl. 138-94.000.
Smith, Glen F. Router support apparatus. 5,082,234, Cl. 248-669.000.
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Lawton, Peter G.; and Smith, Norman, 5,081,754, Cl. 29-419.100.
Smith, Rodney B.: *See*—
Person, Dennis W.; Timte, Frank W.; Daubenmier, John A.; Zielke, John I.; Smith, Rodney B.; and Williams, Roy S., 5,081,886, Cl. 74-866.000.
Smith, Terrence R.: *See*—
Isnardi, Michael A.; and Smith, Terrence R., 5,083,196, Cl. 358-12.000.
Smith, Terry C. Reconfigurable slide for moving furniture. 5,081,740, Cl. 16-42.00R.
Smith, W. Novis, Jr.; and Holemans, Peter. Fabrics for protective garment or cover. 5,082,721, Cl. 428-252.000.
Smith, Wayne R.; and Sullivan, William A., to Xerox Corporation. Application of MICR media to xerographic images. 5,083,157, Cl. 355-200.000.
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Brown, Thomas H.; Ife, Robert J.; and Leach, Colin A., 5,082,841, Cl. 514-235.200.
Snipes, Wallace C.; and Agarwala, Neena, to Zetachron, Inc. Pharmaceutical composition for drugs subject to supercooling. 5,082,655, Cl. 424-386.000.
Sobodowski, Joseph J.: *See*—
Andreotti, Peter E.; Morse, Irwin S.; Thornthwaite, Jerry T.; Heimer, Malcolm L.; Salinger, Jorge D.; and Sobodowski, Joseph J., 5,082,628, Cl. 422-82.080.
S.A. Acec-Union Miniere N.V.: *See*—
Meeus, Marcel; and Strauven, Yvan, 5,082,622, Cl. 420-514.000.
S.A. Constructions Ferroviaires et Metalliques: *See*—
De Ro, Michel D.; and Hecq, Pierre, 5,081,934, Cl. 105-168.000.
Societe Interroll: *See*—
Blondeau, Pierre, 5,082,109, Cl. 198-781.000.
Societe Nationale Industrielle et Aerospatiale: *See*—
Aubry, Jacques A.; and Mauduit, Daniel A., 5,082,314, Cl. 285-174.000.
Vezain, Gerard; Auternaud, Jacques; and Viale, Daniel, 5,082,212, Cl. 244-173.000.
Societe Nouvelle Nermag: *See*—
Devant, Gerard; and Maulat, Olivier, 5,083,021, Cl. 250-292.000.
Soderquist, Charles E.; and Hellstrom, Steven P., to Cole-Parmer Instrument Company. Peristaltic pump. 5,082,429, Cl. 417-477.000.
Sofia, R. Duane, to Carter-Wallace, Inc. Method for the prevention and control of epileptic seizure associated with complex partial seizures. 5,082,861, Cl. 514-534.000.
Sogo, Kiyomi: *See*—
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Sohn, Erich; Handte, Reinhard; Mildenberger, Hilmar; Burstell, Helmut; Bauer, Klaus; and Bieringer, Hermann, to Hoechst Aktiengesellschaft. Phenylpyrazolecarboxylic acid derivative preparation. 5,082,949, Cl. 548-378.000.

Solar Turbines Incorporated: *See—*
Darragh, Charles T., 5,081,834, Cl. 60-39.511.
Darragh, Charles T., 5,082,050, Cl. 165-81.000.
Solmat Systems, Ltd.: *See—*
Raviv, Avi, 5,082,397, Cl. 405-176.000.
Somlyody, Arpad; and Neilson, Paul C. Apparatus for configuring a remote process sensor and signal transmitter. 5,083,288, Cl. 364-550.000.
Sommermann, Friedrich: *See—*
Kreitner, Ludwig; Grau, Werner; Lehner, August; Reichert, Hans; Sommermann, Friedrich; Schneider, Norbert; and Erhardt, Gerd, 5,082,689, Cl. 427-128.000.
Song, Jin Il, to Samsung Electronics Co. Ltd. Position control means and method for servo motor. 5,083,072, Cl. 318-571.000.
Sono, Hiroshi: *See—*
Inoue, Kazuo; Ajiki, Yoshio; and Sono, Hiroshi, 5,081,971, Cl. 123-308.000.
Sony Corporation: *See—*
Arai, Tsutomu, 5,083,205, Cl. 358-140.000.
Hashimoto, Yasuhiro; and Sakura, Kohei, 5,083,215, Cl. 358-448.000.
Inoue, Tatsuo; and Niimura, Tsutomu, 5,083,209, Cl. 358-228.000.
Komatsu, Yoshihiro; Yoshii, Youji; and Murakami, Daisuke, 5,083,126, Cl. 341-156.000.
Ohba, Akio, 5,083,201, Cl. 358-105.000.
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Saito, Tsukasa; Kiriyama, Hiroshi; and Noguchi, Toshiaki, 5,082,195, Cl. 242-199.000.
Sakamoto, Mitsuo, 5,083,139, Cl. 346-76.0PH.
Uchida, Kazuhiro; and Yamamoto, Kikuo, 5,083,228, Cl. 360-77.140.
Soper, Gerald E., to Four Seasons Industrial Services, Inc. Secondary containment dispensing tank. 5,082,034, Cl. 141-88.000.
Sorensen, John R. J. Anti-inflammatory and anti-ulcer compounds and process. 5,082,834, Cl. 514-159.000.
Sortland, Matthew D.: *See—*
Winter, John M.; Scheel, Jerry L.; and Sortland, Matthew D., 5,083,103, Cl. 335-14.000.
Soubrie, Philippe: *See—*
Garcia, Georges; Malta, Alain D.; and Soubrie, Philippe, 5,082,858, Cl. 514-456.000.
Soushin, Koji; Koshin, Hiroaki; Okamoto, Shinichi; and Ohashi, Toshiharu, to Matsushita Electric Works, Ltd. Driving circuit for brushless motor. 5,083,067, Cl. 318-254.000.
Space Systems/Loral, Inc.: *See—*
Forsberg, Bjorn G., 5,083,094, Cl. 330-124.00R.
Spacesaver Corporation: *See—*
Muth, James C.; and Slattery, James J., 5,082,178, Cl. 238-281.000.
Spangenberg, Rolf: *See—*
Obermeier, Josef; Spangenberg, Rolf; and Linke, Theodor, 5,082,070, Cl. 175-403.000.
Spangler, Glenn E., to Environmental Technologies Group, Inc. Preconcentrator for ion mobility spectrometer. 5,083,019, Cl. 250-286.000.
Spatial Dynamics, Ltd.: *See—*
Yukl, Tex, 5,083,089, Cl. 324-632.000.
Spears, William E., Jr.: *See—*
Kirschner, Lawrence; Lajoie, Michael S.; and Spears, William E., Jr., 5,081,799, Cl. 51-410.000.
Spector, George: *See—*
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Landa, Benzion, 5,083,165, Cl. 355-256.000.
Spee, Rene : *See—*
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Spencer, Kenneth W.; and Horvat, David T., to National Slag Limited. Enclosures for slag pelletization apparatus and method of operation thereof. 5,082,483, Cl. 65-19.000.
Speranza, George P.; and Lin, Jiang-Jen, to Texaco Chemical Company. Polyamide-ester from polyethylene glycol monoamine and catalytic process therefor. 5,082,924, Cl. 528-339.000.
Spezialmaschinenbau Steffel GmbH & Co. KG: *See—*
Steffel, Horst, 5,083,306, Cl. 378-61.000.
Spitz, Wolfgang, to Continental Aktiengesellschaft. Vehicle wheel for a pneumatic tire. 5,082,040, Cl. 152-379.300.
Spletter, Philip J.; and Goruganthu, Rama R., to Microelectronics and Computer Technology Corporation. Bonding metal electrical members with a frequency doubled pulsed laser beam. 5,083,007, Cl. 219-121.640.
Spraggins, Thomas: *See—*
Levin, David N.; Hu, Xiaoping; Lauterbur, Paul C.; and Spraggins, Thomas, 5,081,992, Cl. 128-653.200.
Spurgeon, Gordon L.; McGhee, Charles M.; and Evans, Frank C., to Wolverine Brass, Inc. Anti-siphon ball cock with volume control. 5,082,017, Cl. 137-217.000.
Square D Company: *See—*
Clark, Charles A., Jr.; Kuo, Wen T.; and Wu, Hyon O., 5,083,003, Cl. 219-110.000.
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SS Pharmaceutical Co., Ltd.: *See—*
Konishi, Ryoji; Oji, Akihito; Kawaji, Toshikuni; Makaya, Osami; Ishihara, Manabu; and Iwasa, Akira, 5,082,663, Cl. 424-445.000.
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Staar S. A.: *See—*
D'Alayer de Costemore d'Arc, Stephane M., 5,082,023, Cl. 137-636.300.
Stadler, Eberhard; and Eger, Matthias, to Sartorius AG. Electronic balance with parallel guide and scale on top. 5,082,073, Cl. 177-212.000.
Staker, Donald D.: *See—*
Kain, William S.; and Staker, Donald D., 5,082,469, Cl. 44-280.000.
Stanbro, William D., to Biotronic Systems Corporation. Three dimensional binding site array for interfering with an electrical field. 5,082,627, Cl. 422-82.010.
Standard Oil Company, The: *See—*
Teller, Raymond G.; Brazdil, James F., Jr.; Bartek, Joseph P.; and Brussee, Ann M., 5,082,816, Cl. 502-84.000.
Stankus, John C.: *See—*
Frease, Jerry E.; Stankus, John C.; Stewart, Eugene H.; and Grissinger, Glen S., 5,082,399, Cl. 405-259.600.
Stanley, John H., to Goodyear Tire & Rubber Company, The. Hose rotation restrainer. 5,082,027, Cl. 138-113.000.
Stanley, M. Dale; Brownlow, Robert D.; Rice, John R.; and Sands, Robert E., to Mueller Co. Gas ball valve. 5,082,246, Cl. 251-315.000.
Starke, Jorg: *See—*
Reil, Axel; Scherer, Rolf; Starke, Jorg; Ghiotte, Renzo; and Lovisetto, Primo, 5,082,425, Cl. 416-188.000.
Starp, Hubertus C. Floor covering/wall covering. 5,082,712, Cl. 428-95.000.
Stasiuk, Michael. Tractor transmission. 5,081,878, Cl. 74-360.000.
State of Oregon Acting by and through the State Board of Higher Education on Behalf of Oregon State University, The: *See—*
Wallace, Alan; and Spee, Rene , 5,083,077, Cl. 322-32.000.
Stavov, Vladimir, to Applied Photonics Research. Double-sided radiation-assisted processing apparatus. 5,083,030, Cl. 250-453.100.
STC PLC: *See—*
Sapsford, Gary S.; and Robinson, Alan, 5,083,090, Cl. 324-632.000.
Ste. Ateliers de la Haute Garronne Ets Auriol Cie: *See—*
Auriol, Jean-Marc; and Bornes, Philippe, 5,082,411, Cl. 411-506.000.
Stefano, Sandra. Method of using inflatable patient support with a bedpan. 5,081,721, Cl. 5-90.000.
Steffel, Horst, to Spezialmaschinenbau Steffel GmbH & Co. KG. Apparatus for the multi-lateral X-ray testing of automotive tires. 5,083,306, Cl. 378-61.000.
Steffen, Ronald W.: *See—*
Goeckner, Victor D.; and Steffen, Ronald W., 5,082,097, Cl. 192-32.000.
Steinbis, Fritz K.: *See—*
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Steine, Hans-Theo: *See—*
Simm, Wolfgang; and Steine, Hans-Theo, 5,082,179, Cl. 239-80.000.
Steiner Company, Inc.: *See—*
Steiner, Robert L.; Holzner, Charles R., Sr.; and Voth, Allen J., 5,082,150, Cl. 222-189.000.
Steiner, James P., to James G. Biddle Co. Differential arc reflectometry. 5,083,086, Cl. 324-533.000.
Steiner, Robert L.; Holzner, Charles R., Sr.; and Voth, Allen J., to Steiner Company, Inc. Liquid dispensing system including a discharge assembly providing a positive air flow condition. 5,082,150, Cl. 222-189.000.
Steinetz, Bruce M.; and Strocky, Paul J., to United States of America, National Aeronautics and Space Administration. High temperature, flexible, fiber-preform seal. 5,082,293, Cl. 277-3.000.
Steinhilber, Wilhelm A. Rotary heading machine. 5,081,732, Cl. 10-52.000.
Steinke, David M.: *See—*
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Stellar Industries, Inc.: *See—*
Vlaanderen, James, 5,082,417, Cl. 414-498.000.
Sterling Grinding Company, Inc.: *See—*
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Stettner, Ernest R.; and Stoltman, Donald D., to General Motors Corporation. Fuel injection. 5,082,184, Cl. 239-408.000.
Stevens, Bradley D.: *See—*
Walles, Wilhelm E.; Achille, Felix; Fiero, Terry H.; Gregory, Steve D.; Kirch, Timothy O.; and Stevens, Bradley D., 5,082,740, Cl. 428-461.000.
Stevens, Douglas W. Distance measuring golf putting apparatus. 5,082,276, Cl. 273-162.00F.
Stevens, Samuel B.: *See—*
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Stewart, Eugene H.: *See—*
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Stewart, Peter V.; and Butts, David R. Vehicle cargo clamp. 5,082,404, Cl. 410-127.000.
Stewart, Prince; and Spector, George. Ballpoint feather pen. 5,082,385, Cl. 401-88.000.
Stockwell, David M.; Koermer, Gerald S.; and Jaglowski, William M., to Engelhard Corporation. Shell-coated FCC catalysts. 5,082,814, Cl. 502-68.000.

Stoltman, Donald D.: *See*—
Stettner, Ernest R.; and Stoltman, Donald D., 5,082,184, Cl. 239-408.000.

Stolzer, Armin, to Keuro Maschinenbau GmbH & Co. KG. Horizontal power band saw, and method of operation. 5,081,890, Cl. 83-13.000.

Stone, Irving I.; and Imhoff, Glenn T. Greeting card structure. 5,081,776, Cl. 40-124.100.

Straughan, Keith: *See*—
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Strauven, Yvan: *See*—
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Strissel, Jerry; Pollak, George; and Kindiger, Bryan, to Orsan. High-lysine corn. 5,082,993, Cl. 800-200.000.

Strocky, Paul J.: *See*—
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Stroszynski, Joachim; Boergerding, Heinz; and Lehmann, Peter, to Hoechst Aktiengesellschaft. Process and apparatus for roughening a substrate for photosensitive layers. 5,082,537, Cl. 205-139.000.

Stroud, David, to Rolls-Royce plc. Laser drilling of components. 5,083,006, Cl. 219-121.710.

Stroup, H. B., Jr.: *See*—
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Stumpp, Michael; Neumann, Peter; and Eilingsfeld, Heinz, to BASF Aktiengesellschaft. Process for the preparation of bis(4-chlorophenyl) sulfone. 5,082,973, Cl. 568-34.000.

Stuper, John, to Dow Chemical Company, The. Mix head for mixing reactive chemicals. 5,082,633, Cl. 422-133.000.

Sturdivant, Linda D.: *See*—
Pan, Pauline E.; and Sturdivant, Linda D., 5,082,653, Cl. 424-54.000.

Stutz, William H., Jr., to Siemens-Pacesetter, Inc. Multi-contact connector system for an implantable medical device. 5,082,453, Cl. 439-265.000.

STX, Inc.: *See*—
Tucker, Richard B.; Davis, Jackie L.; and Lewis, Fielding H., Jr., 5,082,290, Cl. 273-326.000.

Su, Wei-Yang; Primeaux, Dudley J., II; and Champion, Donald H., to Texaco Chemical Co. Piperazine derivatives as chain extenders in polyurea elastomer systems and method making same. 5,082,917, Cl. 528-68.000.

Subic, Franc. System of vegetation strips for protection of slopes against erosion. 5,082,398, Cl. 405-258.000.

SubMicron Systems, Inc.: *See*—
Molinaro, James S., 5,082,518, Cl. 156-345.000.

Suddith, Robert L.: *See*—
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Suettinger, Rudolf: *See*—
Bobrich, Michael; Roller, Hermann; Lehner, August; Keppeler, Uwe; Suettinger, Rudolf; Loch, Werner; Lenz, Werner; and Schulz, Guenther, 5,082,737, Cl. 428-425.900.

Suga, Yozo: *See*—
Ushigami, Yoshiyuki; Konno, Toyohiko; Suga, Yozo; Ueno, Kiyoshi; Itoh, Mikio; Nishiyama, Toshio; and Takimoto, Kenichi, 5,082,509, Cl. 148-111.000.

Sugi, Hideo; Takahashi, Ryoichi; and Tahara, Kenji, to Kurita Water Industries Ltd. Clathrate compound and process for stabilizing diethyltoluamide. 5,082,654, Cl. 514-617.000.

Sugiki, Mikio: *See*—
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Sugimori, Kiyoyuki: *See*—
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Sugimoto, Yoshihiko: *See*—
Matsumoto, Kazuji; Uchimura, Mitsuo; Shiozaki, Tsugio; Koizumi, Osamu; Sugiura, Ikuzo; and Sugimoto, Yoshihiko, 5,082,273, Cl. 271-215.000.

Sugita, Shuichi: *See*—
Nishijima, Toyoki; Tanji, Masaki; Mizukura, Noboru; and Sugita, Shuichi, 5,082,766, Cl. 430-551.000.

Sugiura, Ikuzo: *See*—
Matsumoto, Kazuji; Uchimura, Mitsuo; Shiozaki, Tsugio; Koizumi, Osamu; Sugiura, Ikuzo; and Sugimoto, Yoshihiko, 5,082,273, Cl. 271-215.000.

Sugiyama, Eiichi: *See*—
Komiyama, Tadashi; Kuboyama, Hisaharu; Jimbo, Takashi; Watanabe, Hiroyoshi; Tokumoto, Shuichi; Endoh, Yumiko; Sugiyama, Eiichi; and Naganuma, Yoshitaro, 5,082,972, Cl. 564-480.000.

Sugiyama, Toshihisa; Yoshioka, Mamoru; Nakata, Kunihiko; Miyake, Takashi; and Kidokoro, Toru, to Toyota Jidosha Kabushiki Kaisha. Internal combustion engine with a dual turbocharger system. 5,081,842, Cl. 60-612.000.

Suhr, Robert N. Flexible cable intermediate support for a heddle frame. 5,082,031, Cl. 139-91.000.

Sule, Sandor, to Pellyfren AG. Hydraulic bicycle brake. 5,082,093, Cl. 188-24.220.

Suling, Carlhans: *See*—
Bachem, Henning; Schroder, Georg; Suling, Carlhans; Reiners, Jurgen; Muszik, Janos; Arlt, Dieter; Jautelat, Manfred; and Schroer, Wolf-Dieter, 5,082,527, Cl. 162-164.300.

Sullivan, William A.: *See*—
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Sulzer Brothers Limited: *See*—
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Sumida, Mamoru; and Matsumoto, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Auxiliary air control valve for engines. 5,081,978, Cl. 123-588.000.

Sumimoto, Shinzaburo; Ishizuka, Ichiro; Ueda, Shiro; and Kai, Hiroyuki, to Shionogi & Co., Ltd. 3-perfluoroalkyl-5-hydroxyisoxazoles. 5,082,947, Cl. 548-243.000.

Sumita, Masaya, to Asahi Kogaku Kogyo Kabushiki Kaisha. Process for producing bone prosthesis. 5,082,803, Cl. 501-1.000.

Sumitomo Chemical Co., Ltd.: *See*—
Imai, Akio; Sugimori, Kiyoyuki; Yamamoto, Keisaku; and Takane, Minoru, 5,082,908, Cl. 526-143.000.
Okada, Toyokazu; Higashi, Koji; and Taguchi, Satoshi, 5,082,601, Cl. 252-585.000.

Sumitomo Electric Industries, Ltd.: *See*—
Akasaka, Nobuhiro; Zakoh, Toshiaki; Yamanishi, Toru; Katsurashima, Wataru; and Ogasawara, Ichiro, 5,082,347, Cl. 385-114.000.
Ueba, Yoshinobu; Mishima, Takayuki; and Saito, Gunzi, 5,082,687, Cl. 427-62.000.

Sumitomo Heavy Industries Foundry & Forging Co., Ltd.: *See*—
Kuwano, Yukimitsu, 5,081,774, Cl. 137-142.00R.

Sumitomo Naugatuck Co., Ltd.: *See*—
Minematsu, Hiroyuki; and Nagai, Yasuo, 5,082,898, Cl. 525-68.000.

Sumitomo Rubber Industries, Ltd.: *See*—
Hamada, Akihiko; and Hiraoka, Hidenori, 5,082,285, Cl. 273-218.000.
Matsushita, Hiroomi; Maekawa, Masao; Hasegawa, Masaji; Yamaguchi, Tetsuo; and Niwa, Kunio, 5,082,437, Cl. 425-225.000.

Sumka, Gary H.: *See*—
Thacher, Kerry E.; Sumka, Gary H.; Barakat, Mohamed A.; Hancharyk, John S.; and Klayh, John A., 5,083,271, Cl. 364-411.000.

Summers, Andrew: *See*—
Sutehall, Ralph; and Summers, Andrew, 5,082,380, Cl. 385-114.000.

Sun Microsystems, Inc.: *See*—
Joy, William; and Garner, Robert B., 5,083,263, Cl. 395-425.000.

Sundstrom, Clinton J. Retainer clip for flexible tube. 5,082,144, Cl. 222-99.000.

Suno, Masahiro: *See*—
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Support Services International, Inc.: *See*—
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Surgical Concepts, Inc.: *See*—
Corbitt, John D., Jr.; Kuzmick, Kenneth M.; O'Hearn, Stephanie L.; and Santilli, Albert N., 5,082,111, Cl. 206-363.000.

Surgnier, David H.: *See*—
Wood, Edward T.; Surgnier, David H.; and Brooks, Robert T., 5,082,062, Cl. 166-382.000.

Sutehall, Ralph; and Summers, Andrew, to Northern Telecom Europe Limited. Optical fibre cable. 5,082,380, Cl. 385-114.000.

Sutherland, Joyce E.: *See*—
Rohde, Larry A.; Hall, Mark R.; Kroeger, Edward; and Sutherland, Joyce E., 5,082,373, Cl. 374-155.000.

Sutphen, Robert R.: *See*—
Hill, Daryl G.; Robert, Roderick C.; and Sutphen, Robert R., 5,082,177, Cl. 239-77.000.

Sutton, James L.; and Van Valkenburg, Stephen H. Core-drilling apparatus with mandrel driver-ejector. 5,082,403, Cl. 408-68.000.

Suzuki, Akihiro; Yamamoto, Hiroshi; and Tobita, Hiroshi, to Ikegami Tsushinki Co., Ltd. Sorter. 5,082,257, Cl. 271-293.000.

Suzuki, Akira: *See*—
Fujiwara, Mitsuru; Suzuki, Akira; and Okita, Junji, 5,082,427, Cl. 417-292.000.

Suzuki, Hidemasa: *See*—
Abe, Hiraku; Suzuki, Hidemasa; Tokunaga, Ichiro; and Ogawa, Yasuaki, 5,081,756, Cl. 29-593.000.

Suzuki, Hideo: *See*—
Hiyoshi, Teruo; Suzuki, Hideo; Aoki, Eiichiro; Nakada, Akira; Kumano, Shinji; Watanabe, Kunihiko; and Sakama, Masao, 5,081,896, Cl. 84-600.000.

Suzuki, Hironori; and Ikutame, Teruaki, to Mitsubishi Denki Kabushiki Kaisha. Method for error correction in synchronized superposed operation of servomotors. 5,083,074, Cl. 318-625.000.

Suzuki, Hiroyuki: *See*—
Iwaki, Takashi; Itou, Kazunori; Matsumoto, Hiroshi; Suzuki, Hiroyuki; Shibata, Juzo; and Uematsu, Nobuyuki, 5,082,048, Cl. 165-1.000.

Suzuki, Kohji; Masumura, Masao; Oyama, Hajime; and Namekata, Shinichi, to Ricoh Company, Ltd. Image density control method and color image forming apparatus. 5,083,160, Cl. 355-208.000.

Suzuki Motor Corporation: *See*—
Yamashita, Yoshinori; and Yamamoto, Hiroaki, 5,082,096, Cl. 192-0.032.

Suzuki, Nobuya: *See*—
Wakatsuki, Yuji; Kondo, Shigekazu; Takaoka, Mitsuyuki; Hirosawa, Masaru; and Suzuki, Nobuya, 5,081,850, Cl. 62-405.000.

Suzuki, Sanae: *See*—
Suzuki, Yoshitsugu; Iizuka, Shougo; Kajiyama, Shigeo; Suzuki, Sanae; and Kudo, Shigeji, 5,082,253, Cl. 269-45.000.

Suzuki, Takashi; and Kai, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. Thin film-type magnetic disk. 5,082,709, Cl. 428-64.000.

Suzuki, Toshiyuki, to Kabushiki Kaisha Toshiba. Electron beam exposure apparatus. 5,083,032, Cl. 250-492.200.

Suzuki, Yoshihiko: *See—*
Kusaka, Kensaku; Suzuki, Yoshihiko; Kimura, Shigeo; Hosoi, Atsushi; Adachi, Hiroyuki; and Kinoshita, Masahide, 5,083,168, Cl. 355-285.000.

Suzuki, Yoshitsugu; Iizuka, Shougo; Kajiyama, Shigeo; Suzuki, Sanae; and Kudo, Shigeji. Wire harness. 5,082,253, Cl. 269-45.000.

Swagel, Jeffrey R.: *See—*
Homel, Randall J.; and Swagel, Jeffrey R., 5,082,171, Cl. 232-43.200.

Swars, Helmut, to Emitec Gesellschaft fur Emissionstechnologie mgH. Driveshaft with driving elements attached to it in groups. 5,081,880, Cl. 74-567.000.

Swartz, Elmer L. Dice game simulating horseshoe pitching. 5,082,288, Cl. 273-244.000.

Swenson, Julius A. Bowl for serving popcorn and the like. 5,082,140, Cl. 220-669.000.

Swenson, Paul F., to Consolidated Natural Gas Service Company, Inc. Low pollution natural gas vehicle. 5,081,977, Cl. 123-527.000.

SWF Auto-Electric GmbH: *See—*
Paulat, Annerose; and Wirth, Hans-Joachim, 5,083,243, Cl. 362-61.000.

Swiss Aluminium Ltd.: *See—*
Hardt, Jean, 5,082,146, Cl. 222-135.000.

Switzer, Robert D. Cartridge clip. 5,081,778, Cl. 42-50.000.

Swofford, Howard W., to Hoechst Celanese Corporation. Polyester film primed with an aminofunctional silane, and film laminates thereof. 5,082,738, Cl. 428-437.000.

Sydansk, Robert D., to Marathon Oil Company. Sand consolidation treatment for a hydrocarbon production well bore using an overdisplacement fluid. 5,082,057, Cl. 166-295.000.

Synaptics, Incorporated: *See—*
Mead, Carver A.; Allen, Timothy P.; Faggin, Federico; and Anderson, Janeen D. W., 5,083,044, Cl. 307-311.000.

Syntex (U.S.A.) Inc.: *See—*
Muchowski, Joseph M.; and Cho, In-Seop, 5,082,950, Cl. 548-453.000.
Muchowski, Joseph M.; and Cho, In-Seop, 5,082,951, Cl. 548-453.000.
Pascal, Jean-Claude; Patmore, Leslie; Pfister, Jurg; Blondet, Dominique; and Armstrong, John M., 5,082,847, Cl. 514-312.000.

Synthetic Products Company: *See—*
Gorssman, Richard F.; and Tanno, David M., 5,083,235, Cl. 361-311.000.

Syobatake, Yasuro; and Kumaki, Yoshinari, to Kabushiki Kaisha Toshiba. Buffer device suitable for asynchronous transfer mode communication. 5,083,269, Cl. 395-425.000.

Syoji, Makoto: *See—*
Tsuyuguchi, Hiroshi; Syoji, Makoto; and Morita, Tsutomu, 5,083,302, Cl. 369-44.110.

Syracuse Utilities, Inc.: *See—*
Cornell, Ron A., 5,082,068, Cl. 173-22.000.

Syrier, Johannes L. M.: *See—*
Kluttz, Robert Q.; and Syrier, Johannes L. M., 5,082,885, Cl. 524-347.000.

Szczyrbowski, Joachim; and Roegels, Stephan, to Leybold Aktiengesellschaft. Apparatus for the reactive coating of a substrate. 5,082,546, Cl. 204-298.080.

Szekely, Kristina: *See—*
Molnar, Csaba; Hajos, Gyorgy; Szporny, Laszlo; Toth, Jozsef; Kiraly, Arpad; Boor nee Mezei, Anna; Csorgei, Janos; Szekely, Kristina; Forgacs, Lilla; Fekete, Gyorgy; Herenyi, Bulcsu; Holly, Sandor; and Szunyog, Jozsef, 5,082,835, Cl. 514-180.000.

Szklany, Craig: *See—*
Drucker, Frank; and Szklany, Craig, 5,083,111, Cl. 340-572.000.

Szporny, Laszlo: *See—*
Molnar, Csaba; Hajos, Gyorgy; Szporny, Laszlo; Toth, Jozsef; Kiraly, Arpad; Boor nee Mezei, Anna; Csorgei, Janos; Szekely, Kristina; Forgacs, Lilla; Fekete, Gyorgy; Herenyi, Bulcsu; Holly, Sandor; and Szunyog, Jozsef, 5,082,835, Cl. 514-180.000.

Szunyog, Jozsef: *See—*
Molnar, Csaba; Hajos, Gyorgy; Szporny, Laszlo; Toth, Jozsef; Kiraly, Arpad; Boor nee Mezei, Anna; Csorgei, Janos; Szekely, Kristina; Forgacs, Lilla; Fekete, Gyorgy; Herenyi, Bulcsu; Holly, Sandor; and Szunyog, Jozsef, 5,082,835, Cl. 514-180.000.

Tabata, Masayoshi; Kushibiki, Nobuo; and Yoshinaga, Yoko, to Canon Kabushiki Kaisha. Polymer of vinyl-biphenyl derivative adapted for optical use. 5,082,358, Cl. 359-642.000.

Taborsky, Petr. Aluminosilicates with modified cation affinity. 5,082,813, Cl. 502-60.000.

Tachi-S Co., Ltd.: *See—*
Shimazaki, Mitsuo, 5,082,228, Cl. 248-430.000.

Tachinoh, Masaaki: *See—*
Miyaoka, Satoshi; and Tachinoh, Masaaki, 5,081,838, Cl. 60-444.000.

Tackett, James E., Jr., to Marathon Oil Company. In situ reversible crosslinked polymer gel used in hydrocarbon recovery applications. 5,082,056, Cl. 166-295.000.

Tagami, Hidetoshi: *See—*
Tamura, Tadashi; Kiyomine, Akira; Tanaka, Michio; Nishizawa, Yoshinori; Tagami, Hidetoshi; Ogawa, Masahiko; Yoshihara, Toru; Muraoka, Tsutomu; and Kawase, Jiro, 5,082,467, Cl. 8-409.000.

Tagaya, Nobuaki; Kuwahara, Hideyuki; Hashimoto, Takao; Komatsu, Noriko; Fukamachi, Keiko; Maeshima, Tsugio; Ishikawa, Toshihiro; and Ogawa, Tetsuro, to Toa Nenryo Kogyo Kabushiki Kaisha; and Asahi Kogaku Kogyo Kabushiki Kaisha. Calcium-phosphate type hydroxyapatite for chromatographic separation and process for producing same. 5,082,566, Cl. 210-656.000.

Tagiri, Osamu, to Anritsu Corporation. High frequency signal measuring equipment with cabled detecting and signal companding. 5,083,080, Cl. 324-118.000.

Taguchi, Kazushige; and Furuta, Hideya, to Ricoh Company, Ltd. Image forming apparatus. 5,083,141, Cl. 346-108.000.

Taguchi, Satoshi: *See—*
Okada, Toyokazu; Higashi, Koji; and Taguchi, Satoshi, 5,082,601, Cl. 252-585.000.

Tahara, Kenji: *See—*
Sugi, Hideo; Takahashi, Ryoichi; and Tahara, Kenji, 5,082,654, Cl. 514-617.000.

Tai Lio Enterprise Co., Ltd.: *See—*
Huang, Jeng-Shiung, 5,082,127, Cl. 212-265.000.

Taiho Kogyo Co., Ltd.: *See—*
Futamura, Kenichiro; Hong, Sumyong; and Mizuguchi, Sinichi, 5,082,512, Cl. 148-330.000.

Tailored Lighting Company, Inc.: *See—*
McGuire, Kevin P., 5,083,252, Cl. 362-293.000.

Taira, Hatsuo; Ikeda, Masakazu; Harada, Yoshio; and Hagiwara, Hiroshi, to Tocalo Co., Ltd.; and Onoda Cement Co., Ltd. Thermal spray material and thermal sprayed member using the same. 5,082,741, Cl. 428-469.000.

Tajima, Masao, to Kabushiki Kaisha Toritsu Industry. Sanitary rubber article. 5,082,875, Cl. 523-103.000.

Takagi, Hiroshi; Mori, Yoshiaki; and Sakabe, Yukio, to Murata Manufacturing Co., Ltd. Non-reduction agent for dielectric ceramics. 5,082,593, Cl. 252-397.000.

Takagi, Soya: *See—*
Kato, Sinji; Takagi, Soya; Kawasaki, Minoru; Mori, Kazuhiko; and Ueda, Katsuhiko, 5,082,625, Cl. 420-453.000.

Takahara, Kuniaki: *See—*
Umeda, Takashi; Kanemitsu, Norihiro; Murakami, Kousuke; Takahara, Kuniaki; and Sakurai, Ushio, 5,082,078, Cl. 180-90.000.

Takahashi, Hironori: *See—*
Aoshima, Shinichiro; Takahashi, Hironori; and Tsuchiya, Yutaka, 5,082,340, Cl. 359-328.000.

Takahashi, Hiroo: *See—*
Owa, Hideo; Sugiki, Mikio; Okada, Hitoshi; and Takahashi, Hiroo, 5,083,212, Cl. 358-319.000.

Takahashi, Kaoru; Tsumuji, Akio; and Shutoku, Ryuji, to Nohmi Bosai Kabushiki Kaisha. Fire alarm system. 5,083,107, Cl. 340-506.000.

Takahashi, Keiiechi: *See—*
Nakano, Hirofumi; Hara, Mitsunobu; Uosaki, Yohichi; Kawamoto, Isao; Takahashi, Keiiechi; and Gomi, Katsushige, 5,082,857, Cl. 514-453.000.

Takahashi, Masayuki: *See—*
Nonomura, Kinzo; Kitao, Satoshi; Murai, Ryuichi; Hashiguchi, Jumpei; Hamada, Kiyoshi; and Takahashi, Masayuki, 5,083,058, Cl. 313-482.000.

Takahashi, Osamu, to Fuji Photo Film Co., Ltd. Silver halide color photographic material and method for forming color image. 5,082,764, Cl. 430-377.000.

Takahashi, Ryoichi: *See—*
Sugi, Hideo; Takahashi, Ryoichi; and Tahara, Kenji, 5,082,654, Cl. 514-617.000.

Takahashi, Sadao, to Hitachi, Ltd. Mass spectrometer. 5,083,020, Cl. 250-288.000.

Takahashi, Takehiko; and Shimizu, Yuji, to Combi Corporation. Folding baby bed. 5,081,724, Cl. 5-136.000.

Takahashi, Tatsunori; Unuma, Makoto; and Uchida, Naoshi, to Fuji Electric Co., Ltd. Switching mechanism in circuit breaker. 5,082,996, Cl. 200-401.000.

Takahashi, Yasushi, to Fujitsu Limited. Charged particle beam exposure method. 5,082,762, Cl. 430-296.000.

Takahashi, Yoshiaki: *See—*
Tasaka, Shigeaki; Nakano, Nobuhiko; Maeda, Kazuya; Ishida, Toshihisa; Takahashi, Yoshiaki; Nakamura, Tadashi; Yamaue, Satoshi; and Nakamura, Kumiko, 5,082,761, Cl. 430-137.000.

Takakura, Keiji: *See—*
Kikuchi, Tokio; Shiina, Hiroshi; Takakura, Keiji; and Ichihashi, Satoru, 5,081,873, Cl. 73-865.900.

Takane, Minoru: *See—*
Imai, Akio; Sugimori, Kiyoyuki; Yamamoto, Keisaku; and Takane, Minoru, 5,082,908, Cl. 526-143.000.

Takano, Hisashi: *See—*
Shiiki, Kazuo; Shiroishi, Yoshihiro; Ohta, Norio; Tsuyoshi, Toshiaki; Takano, Hisashi; and Kugiya, Fumio, 5,083,226, Cl. 360-77.050.

Takano, Kaoru: *See—*
Wakatsuki, Masao; Takano, Kaoru; Kitagawa, Kazuo; Urabe, Katsufumi; and Ishida, Toshimitsu, 5,082,635, Cl. 422-245.000.

Takano, Kohzoh; Oyobiki, Yoshinori; Watabe, Yoshiharu; and Kondo, Yasuo, to Honda Giken Kogyo Kabushiki Kaisha. Workpiece machining system. 5,081,889, Cl. 82-122.000.

Takano, Tsunesuke, to Daiichi Denso Buhin Co., Ltd. Clamp-type electrical connectors. 5,082,452, Cl. 439-206.000.

Takaoka, Mitsuyuki: *See—*
Wakatsuki, Yuji; Kondo, Shigekazu; Takaoka, Mitsuyuki; Hirosawa, Masaru; and Suzuki, Nobuya, 5,081,850, Cl. 62-405.000.

Takase, Tsugiko: *See*—
Miyamoto, Hirofumi; Takase, Tsugiko; Okada, Takao; Mishima, Shuzo; and Ohta, Hiroko, 5,083,022, Cl. 250-306.000.

Takasu, Akihide; and Sagisaka, Atsushi, to Casio Computer Co., Ltd. Hand-held image reading apparatus. 5,083,218, Cl. 358-473.000.

Takauji, Kiyomi, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument having waveform memory. 5,081,897, Cl. 84-604.000.

Takayama, Masami, to Pioneer Electronic Corporation. Window glass antenna for vehicle. 5,083,133, Cl. 343-704.000.

Takeda, Atsushi: *See*—
Fukushima, Satoru; Takeda, Kenichi; Takeda, Atsushi; Uchikawa, Yoshio; and Hasegawa, Takashi, 5,083,167, Cl. 355-274.000.

Takeda Chemical Industries, Ltd.: *See*—
Naka, Takehiko; Shimamoto, Norio; Saijo, Taketoshi; and Suno, Masahiro, 5,082,838, Cl. 514-211.000.

Takeda, Kenichi: *See*—
Fukushima, Satoru; Takeda, Kenichi; Takeda, Atsushi; Uchikawa, Yoshio; and Hasegawa, Takashi, 5,083,167, Cl. 355-274.000.

Takeda, Naohiro; Otani, Yuzo; Okajima, Nariaki; and Kita, Masahiro, to Diafoil Company, Limited. Stretched polyester film having an antistatic coating comprising a polymer having pyrrolidium rings in the main chain. 5,082,730, Cl. 428-336.000.

Takeda, Shiro; Namiki, Fumihiro; and Yamada, Isamu, to Fujitsu Limited. Digital X-ray image read apparatus with a correction function. 5,083,024, Cl. 250-327.200.

Takeno, Katsuji. Golf tee. 5,082,264, Cl. 273-33.000.

Takeshita, Masahiko: *See*—
Sawada, Shigeru; Maruyama, Mitsuaki; Sawada, Kenji; Nakagawa, Hitoshi; Tsujimoto, Jun; Kasai, Shinichi; Takeshita, Masahiko; Kaneta, Satoshi; Koiwai, Masahiro; and Niki, Hiroshi, 5,083,170, Cl. 355-319.000.

Takeuchi, Hiroshi, to Hasegawa Machinery Limited; and Hiroshi Takeuchi. Head box in a paper machine. 5,082,531, Cl. 162-343.000.

Takeuchi, Kunihiro: *See*—
Okano, Masami; Takeuchi, Kunihiro; and Ishizuka, Hideki, 5,083,276, Cl. 364-424.050.

Takigawa, Tadahiro: *See*—
Komano, Haruki; Hamasaki, Toshihiko; and Takigawa, Tadahiro, 5,083,033, Cl. 250-492.200.

Takimoto, Kenichi: *See*—
Ushigami, Yoshiyuki; Konno, Toyohiko; Suga, Yozo; Ueno, Kiyoshi; Itoh, Mikio; Nishiyama, Toshio; and Takimoto, Kenichi, 5,082,509, Cl. 148-111.000.

Takizawa, Toshiaki; and Tominaga, Yutaka, to Yoshida Kogyo K.K. Slide fastener slider. 5,081,747, Cl. 24-415.000.

Talbot, James E., to Protect-A-Boat of New Jersey, Inc. Vent for shrink film packaging. 5,081,911, Cl. 454-370.000.

Tallerino, Charles E.: *See*—
Held, Jimmy L.; Tallerino, Charles E.; and Reich, Ronald S., 5,082,318, Cl. 294-19.100.

Tamrock World Corporation, N.V.: *See*—
LeBegue, Maurice K.; and Wilson, Henry E., 5,082,331, Cl. 299-64.000.

Tamura, Tadashi; Kiyomine, Akira; Tanaka, Michio; Nishizawa, Yoshinori; Tagami, Hidetoshi; Ogawa, Masahiko; Yoshihara, Toru; Muraoka, Tsutomu; and Kawase, Jiro, to Kao Corporation. Dye composition for keratinous fibers. 5,082,467, Cl. 8-409.000.

Tanaka, Fusatoshi: *See*—
Kurokawa, Toshikazu; Tanaka, Fusatoshi; Matsuura, Kouji; and Aoki, Motoi, 5,081,962, Cl. 123-52.0MV.

Tanaka, Kimio: *See*—
Satoh, Takateru; Tanaka, Kimio; Shiba, Haruo; Uemura, Noboru; and Akaoka, Kenkichi, 5,082,197, Cl. 242-199.000.

Tanaka, Kouichi; and Uchiyama, Isao, to Shin-Etsu Handotai Company, Ltd. Polishing apparatus. 5,081,795, Cl. 51-131.100.

Tanaka, Kunio; Ohnishi, Youichi; and Yokoyama, Masahide, to Matsushita Electric Industrial Co., Ltd. Sputtering apparatus. 5,082,545, Cl. 204-298.030.

Tanaka, Michio: *See*—
Tamura, Tadashi; Kiyomine, Akira; Tanaka, Michio; Nishizawa, Yoshinori; Tagami, Hidetoshi; Ogawa, Masahiko; Yoshihara, Toru; Muraoka, Tsutomu; and Kawase, Jiro, 5,082,467, Cl. 8-409.000.

Tanaka, Norichika: *See*—
Ishida, Takashi; Ueda, Yoshikazu; Kubota, Teruji; Igarashi, Misao; Tanaka, Norichika; and Kamijo, Yasuhiko, 5,081,937, Cl. 110-246.000.

Tanaka, Soutarou: *See*—
Yagyu, Takashi; Tanaka, Soutarou; and Katsuki, Kimio, 5,081,905, Cl. 91-461.000.

Tanaka, Takashi: *See*—
Sadano, Yutaka; Nakashima, Yuuji; Tanaka, Takashi; Kawasaki, Takatoshi; Shibata, Shinji; Aoyagi, Hikaru; Nishizawa, Yoshio; and Kasahara, Akihiko, 5,082,167, Cl. 228-258.000.

Tanaka, Toshio: *See*—
Tsuzuki, Yasushi; Tanaka, Toshio; and Iizuka, Yasuhiro, 5,082,594, Cl. 252-502.000.

Tanaka, Toshizo: *See*—
Wolf, Erhard; Gebert, Ulrich; Furrer, Harald; Tanaka, Toshizo; Sakurai, Masao; and Goto, Masayoshi, 5,082,845, Cl. 514-263.000.

Tandem Scanning Corporation: *See*—
Hill, James D., 5,083,220, Cl. 359-234.000.

Tange, Yoshihiro; and Matsuda, Hideaki, to Okura Kogyo Kabushiki Kaisha. Process of producing porous ceramics. 5,082,607, Cl. 264-44.000.

Tangney, Thomas J., to Dow Corning Corporation. Pressure sensitive adhesive/release liner laminate. 5,082,706, Cl. 428-40.000.

Tani, Toshio: *See*—
Morichika, Toshiaki; Tani, Toshio; Sakai, Chiaki; Koshimoto, Hideo; and Kadowaki, Tatsuhiko, 5,082,750, Cl. 428-694.000.

Taniguchi, Masao; Umezu, Kohei; Shirasaka, Tadashi; Inoue, Shinya; Shinpuku, Tetsuro; Mitsuka, Masayuki; and Hirata, Mayumi, to Mitsubishi Kasei Corporation. Pyrrolecarboxylic acid derivatives. 5,082,856, Cl. 514-423.000.

Taniguchi, Tomizo: *See*—
Miyake, Akira; Akai, Norio; and Taniguchi, Tomizo, 5,082,728, Cl. 428-329.000.

Tanii, Masao. Concrete aggregate collecting apparatus. 5,082,553, Cl. 209-3.000.

Tanji, Masaki: *See*—
Nishijima, Toyoki; Tanji, Masaki; Mizukura, Noboru; and Sugita, Shuichi, 5,082,766, Cl. 430-551.000.

Tanno, David M.: *See*—
Gorssman, Richard F.; and Tanno, David M., 5,083,235, Cl. 361-311.000.

Tarnow, Horst; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. N-substituted benzamides. 5,082,862, Cl. 514-617.000.

Tasaka, Shigeaki; Nakano, Nobuhiko; Maeda, Kazuya; Ishida, Toshihisa; Takahashi, Yoshiaki; Nakamura, Tadashi; Yamaue, Satoshi; and Nakamura, Kumiko, to Sharp Kabushiki Kaisha. Set of electrophotographic toners. 5,082,761, Cl. 430-137.000.

Tashiro, Hiroshi; Nakamura, Yoshio; and Ohnishi, Masatoshi, to Toshiba Ceramics Co., Ltd. Sintered silicon carbide composite. 5,082,597, Cl. 252-516.000.

Tashiro, Yasunori; and Tomiyama, Daiji, to Rheon Automatic Machinery Co., Ltd. Material supply apparatus. 5,081,918, Cl. 99-450.600.

Taupin, Jean-Paul. Helicoidal device for extracting material in particle form from a reservoir. 5,082,414, Cl. 414-306.000.

Taylor Machine Works, Inc.: *See*—
Walker, Evo M., 5,082,090, Cl. 187-9.00E.

Tazi, Mohammed, to ISP Investments Inc. Polymerization process using tertiary-amylperoxy pivalate as the free radical initiator. 5,082,910, Cl. 526-227.000.

Tazi, Mohammed; Login, Robert B.; and Kwak, Yoon T., to ISP Investments Inc. Terpolymers of maleic anhydride, alkyl vinyl ethers and isobutylene and crosslinked products thereof. 5,082,913, Cl. 526-272.000.

TDK Corporation: *See*—
Morooka, Hisao, 5,082,685, Cl. 427-38.000.
Nonami, Tohru; and Yasui, Nobuo, 5,082,808, Cl. 501-95.000.
Satoh, Takateru; Tanaka, Kimio; Shiba, Haruo; Uemura, Noboru; and Akaoka, Kenkichi, 5,082,197, Cl. 242-199.000.

Teac Corporation: *See*—
Tsuyuguchi, Hiroshi; Syoji, Makoto; and Morita, Tsutomu, 5,083,302, Cl. 369-44.110.

Technophone Limited: *See*—
Pasco, Ian K., 5,083,240, Cl. 362-26.000.

Teel, Jeff A. Door fabrication station. 5,082,038, Cl. 144-286.00A.

Teikoku Hormone Mfg. Co., Ltd.: *See*—
Yasuda, Kikuo; Shibata, Kenyu; Minami, Nobuyoshi; Seki, Toshimi; Shiraiwa, Masafumi; Nakao, Tomio; Miyasaka, Katsuhiko; Ishimori, Tsutomu; Gotanda, Kotaro; and Sasaki, Takako, 5,082,844, Cl. 514-253.000.

Teikoku Seiyaky Co., Ltd.: *See*—
Konishi, Ryoji; Oji, Akihito; Kawaji, Toshikuni; Makaya, Osami; Ishihara, Manabu; and Iwasa, Akira, 5,082,663, Cl. 424-445.000.

Tektronix, Inc.: *See*—
Hoffman, Eldon P., 5,083,143, Cl. 346-139.00R.

Telandco, Inc.: *See*—
Hammons, James L.; and Lane, William H., 5,082,037, Cl. 144-286.00A.

Teleco Oilfield Services Inc.: *See*—
Nordstrom, Roy, 5,083,124, Cl. 340-853.000.

Teledyne Industries, Inc.: *See*—
Werka, Robert O., 5,082,211, Cl. 244-158.00R.

Teleflex Incorporated: *See*—
McBeth, James B.; and Fetchko, Eric, 5,081,908, Cl. 91-499.000.

Telefonaktiebolaget L M Ericsson: *See*—
Lagerlof, Rolf O. E., 5,083,099, Cl. 333-21.00R.

Telefunken Electronic GmbH: *See*—
Linnebach, Richard, 5,082,339, Cl. 385-14.000.

Teller, Raymond G.; Brazdil, James F., Jr.; Bartek, Joseph P.; and Brussee, Ann M., to Standard Oil Company, The. Lead-zirconate catalysts. 5,082,816, Cl. 502-84.000.

Temple, Victor A. K., to General Electric Company. Method of fabricating a field effect semiconductor device having a self-aligned structure. 5,082,795, Cl. 437-41.000.

Tencor Instruments: *See*—
Pecen, Jiri; Gross, Kenneth P.; Leslie, Brian; and Kren, George, 5,083,035, Cl. 250-561.000.

Terada, Yasuharu; and Horita, Yoshiyuki, to Yoshida Kogyo K.K. Slide fastener lock assembly. 5,081,855, Cl. 70-68.000.

Terakawa, Sumio: *See*—
Yamada, Takahiro; and Terakawa, Sumio, 5,083,173, Cl. 357-24.000.

Terashita, Takaaki; and Sato, Fumiaki, to Fuji Photo Film Co., Ltd. Copying apparatus, print evaluating method for copying apparatus,

method for setting printing conditions, and copying apparatus controller. 5,083,154, Cl. 355-68.000.

Tessier, Jean: *See—*
Cadiergue, Joseph; Demoute, Jean-Pierre; and Tessier, Jean, 5,082,832, Cl. 514-110.000.

Testart, Gerard, to Cogifer (Cie Generale d'Installations Ferroviaires), S.A. Crossing frog with a moving point. 5,082,214, Cl. 246-385.000.

Tetrault, Leonard P., to Aerodyne Controls Corporation. Calibrated quick setting mechanism for air pressure regulator. 5,082,019, Cl. 137-505.380.

Tetzlaff, Wolfgang: *See—*
Hoelsman, James W.; Hegland, Joel E.; Braunlich, Peter F.; and Tetzlaff, Wolfgang, 5,083,031, Cl. 250-484.100.

Texaco Chemical Company: *See—*
Speranza, George P.; and Lin, Jiang-Jen, 5,082,924, Cl. 528-339.000.
Su, Wei-Yang; Primeaux, Dudley J., II; and Champion, Donald H., 5,082,917, Cl. 528-68.000.

Texaco Inc.: *See—*
Nolte, David G.; Haskin, Helen K.; and Colling, Edwin L., Jr., 5,082,787, Cl. 436-31.000.

Texas Instruments Incorporated: *See—*
Garcia, Felix; and Williams, Rodney D., 5,082,350, Cl. 359-478.000.
Gelsomini, Tito, 5,082,802, Cl. 437-217.000.
Hemphill, Charles T.; and Vlach, Frank, 5,083,268, Cl. 395-12.000.
Lamson, Michael A.; and Edwards, Darvin R., 5,083,187, Cl. 357-71.000.
Moslehi, Mehrdad M., 5,082,517, Cl. 156-345.000.
Moslehi, Mehrdad M.; and Davis, Cecil J., 5,082,542, Cl. 204-192.320.
Purdes, Andrew J.; and Celii, Francis G., 5,082,522, Cl. 156-612.000.
Slawinski, Christopher; Houghton, Richard A.; and Brantingham, George L., 5,083,113, Cl. 340-572.000.

Texilma AG: *See—*
Reinhard, Ruedi; and Dorn, Michael, 5,081,752, Cl. 28-140.000.

Th. Goldschmidt AG: *See—*
Burkhart, Georg; Fock, Jurgen; and Mohring, Volker, 5,082,868, Cl. 521-114.000.

Thacher, Kerry E.; Sumka, Gary H.; Barakat, Mohamed A.; Hancharyk, John S.; and Klayh, John A., to Klayh, John A. Tournament data system with game score communication between remote player terminal and central computer. 5,083,271, Cl. 364-411.000.

Theeuwes, Felix: *See—*
Wong, Patrick S. L.; Barclay, Brian L.; Deters, Joseph C.; and Theeuwes, Felix, 5,082,668, Cl. 424-473.000.

Theobald, Paul E.; Seymour, Daniel B.; and Okawa, Dobson M., to Beckman Instruments, Inc. Apparatus and method for dynamic blanking of non-specific light scattering during rate nephelometric reactions. 5,082,790, Cl. 436-536.000.

Thielen, Walter: *See—*
Thomas, Gerhard; and Thielen, Walter, 5,082,477, Cl. 55-443.000.

Thijssen, Stan; and Laser, Jurgen, to Matec Holding AG. Flameproof product. 5,082,727, Cl. 428-328.000.

Thimon, Jacques; and Morantz, Jack, to Newtec International (Societe Anonyme). Film unwinding carriage for a packaging machine. 5,081,824, Cl. 53-556.000.

Think, Inc.: *See—*
Gaetano, Ralph R., 5,082,168, Cl. 229-72.000.

Thomas, Gerhard; and Thielen, Walter, to L & C Steinmuller GmbH. Separator for separating solids from an ascending, solids-laden gas stream. 5,082,477, Cl. 55-443.000.

Thomas J. Lipton Co., Division of Conopco, Inc.: *See—*
Carrell, Rebecca S.; van Dijk, Wietse; Goddard, Mervyn R.; and Hayes, John B., 5,082,674, Cl. 426-52.000.

Thomas, Louis, to Illinois Tool Works Inc. Roofing washer. 5,082,412, Cl. 411-533.000.

Thomas, Paul: *See—*
Greitzer, Steven; and Thomas, Paul, 5,081,956, Cl. 119-19.000.

Thomas, Paul A.: *See—*
Ayers, Gary M.; and Thomas, Paul A., 5,082,233, Cl. 248-553.000.

Thompson, Bryan H., to Environmental Panelling Systems (PTY) Ltd. Demountable wall panelling. 5,081,809, Cl. 52-221.000.

Thompson, Christopher M.; Campbell, Timothy J.; and Gipson, Billy P., to Whirlpool Corporation. Assembly method and construction for a room air conditioner. 5,081,849, Cl. 62-262.000.

Thompson, Malcolm J.: *See—*
Hack, Michael; Thompson, Malcolm J.; and Tuan, Hsing C., 5,083,175, Cl. 357-30.000.

Thomson-Brandt Armements: *See—*
Baubry, Bernard, 5,082,203, Cl. 244-3.280.

Thomson Consumer Electronics, Inc.: *See—*
Poux, Christopher J.; and Sinkus, Donald P., 5,082,418, Cl. 414-736.000.

Thomson CSF: *See—*
Le Bars, Jean-Francois; Vilbois, Vincent; and Dez, Oliver, 5,082,201, Cl. 244-3.160.

Thomson, Paul G.: *See—*
Bosley, Rodney W., Jr.; Thomson, Paul G.; and Foster, Thomas L., 5,081,997, Cl. 128-662.020.

Thomson Tubes Electroniques: *See—*
Nugues, Pierre; and Bizet, Marc, 5,083,060, Cl. 315-3.500.

Thornthwaite, Jerry T.: *See—*
Andreotti, Peter E.; Morse, Irwin S.; Thornthwaite, Jerry T.; Heimer, Malcolm L.; Salinger, Jorge D.; and Sobodowski, Joseph J., 5,082,628, Cl. 422-82.080.

Thrush, Roger L.: *See—*
Billman, Timothy B.; and Thrush, Roger L., 5,082,459, Cl. 439-637.000.

Timan, Peter E.: *See—*
Lapp, Steven P.; and Timan, Peter E., 5,081,933, Cl. 105-3.000.

Timex Corporation: *See—*
Schwartz, Herbert, 5,083,300, Cl. 368-185.000.

Timte, Frank W.: *See—*
Person, Dennis W.; Timte, Frank W.; Daubenmier, John A.; Zielke, John I.; Smith, Rodney B.; and Williams, Roy S., 5,081,886, Cl. 74-866.000.

Tincati, Franco, to Sarcmi S.P.A. Adjustable star wheel conveyor for containers of circular and non-circular section. 5,082,105, Cl. 198-473.100.

Tip Engineering Group, Inc.: *See—*
Bauer, David J., 5,082,310, Cl. 280-732.000.

Tirelli, Marco; Romeas, Rene ; and Gregoire, Yves, to General Electric CGR S.A. Radiation control device with variable active surface of the type sensitive to ionizing radiation. 5,083,305, Cl. 378-37.000.

Tkac, Joseph J., to Tkac & Timm Enterprises, Limited. Process for removing bran layers from wheat kernels. 5,082,680, Cl. 426-483.000.

Tkac & Timm Enterprises, Limited: *See—*
Tkac, Joseph J., 5,082,680, Cl. 426-483.000.

TOA Medical Electronics Co., Ltd.: *See—*
Kosaka, Tokihiro, 5,083,014, Cl. 250-201.700.

Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Tagaya, Nobuaki; Kuwahara, Hideyuki; Hashimoto, Takao; Komatsu, Noriko; Fukamachi, Keiko; Maeshima, Tsugio; Ishikawa, Toshihiro; and Ogawa, Tetsuro, 5,082,566, Cl. 210-656.000.

Tobita, Hiroshi: *See—*
Suzuki, Akihiro; Yamamoto, Hiroshi; and Tobita, Hiroshi, 5,082,257, Cl. 271-293.000.

Tocalo Co., Ltd.: *See—*
Taira, Hatsuo; Ikeda, Masakazu; Harada, Yoshio; and Hagiwara, Hiroshi, 5,082,741, Cl. 428-469.000.

Tod, Michel: *See—*
Mahuzier, Georges; Chalom, Joseph; Farinotti, Robert; and Tod, Michel, 5,082,942, Cl. 546-66.000.

Todd, Paul H., Jr.; and Guzinski, James A., to Kalamazoo Holdings, Inc. Synthesis of hexahydrolupulone, novel forms thereof, and its use as a selective inhibitor of cell growth and multiplication. 5,082,975, Cl. 568-315.000.

Tokizawa, Minoru; Asaoka, Takemitsu; Matsuda, Hideaki; and Katori, Tatsuhiko, to SS Pharmaceutical Co., Ltd. Imidazole derivative. 5,082,948, Cl. 548-342.000.

Tokuda, Kanji, to Fuji Photo Film Co., Ltd. Photograph processing device. 5,083,152, Cl. 355-27.000.

Tokumoto, Shuichi: *See—*
Komiyama, Tadashi; Kuboyama, Hisaharu; Jimbo, Takashi; Watanabe, Hiroyoshi; Tokumoto, Shuichi; Endoh, Yumiko; Sugiyama, Eiichi; and Naganuma, Yoshitaro, 5,082,972, Cl. 564-480.000.

Tokunaga, Ichiro: *See—*
Abe, Hiraku; Suzuki, Hidemasa; Tokunaga, Ichiro; and Ogawa, Yasuaki, 5,081,756, Cl. 29-593.000.

Tokunoh, Futoshi: *See—*
Niinobu, Koji; and Tokunoh, Futoshi, 5,082,800, Cl. 437-180.000.

Tokuyama Soda Co., Ltd.: *See—*
Okada, Masato; and Sakamoto, Makoto, 5,082,770, Cl. 435-26.000.

Tokyo Electric Co., Ltd.: *See—*
Matsumoto, Kazuji; Uchimura, Mitsuo; Shiozaki, Tsugio; Koizumi, Osamu; Sugiura, Ikuzo; and Sugimoto, Yoshihiko, 5,082,273, Cl. 271-215.000.

Tokyo Electron Limited: *See—*
Koshiishi, Akira; and Kawamura, Kohei, 5,083,061, Cl. 315-111.810.

Tomei Sangyo Kabushiki Kaisha: *See—*
Kawaguchi, Toru, 5,082,912, Cl. 526-264.000.

Tominaga, Yutaka: *See—*
Takizawa, Toshiaki; and Tominaga, Yutaka, 5,081,747, Cl. 24-415.000.

Tomita, Akia: *See—*
Matsuo, Hideshige; Yamamoto, Isamu; Itoh, Michio; Sato, Kuniaki; Nakamura, Yoshihiro; Tomita, Akia; and Mihara, Yoshiki, 5,082,166, Cl. 228-189.000.

Tomita, Atsushi; and Sakaguchi, Katsuyoshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Tire vulcanizing machine. 5,082,434, Cl. 425-28.100.

Tomita, Koji: *See—*
Schroeder, Daniel R.; Lam, Kin S.; Hesler, Grace A.; Gustavson, Donald R.; Tomita, Koji; and Berry, Ronald L., 5,082,933, Cl. 536-16.800.

Tomite, Tosio; Nakatsugawa, Keiichi; and Abukawa, Toshimi, to Hitachi, Ltd. Permanent magnet field type DC machine. 5,083,054, Cl. 310-154.000.

Tomiyama, Daiji: *See—*
Tashiro, Yasunori; and Tomiyama, Daiji, 5,081,918, Cl. 99-450.600.

Tomsho, Michelle L.: *See—*
Lenk, Robert P.; Tomsho, Michelle L.; Suddith, Robert L.; and Klimchak, Robert J., 5,082,664, Cl. 424-450.000.

Tonelli, Claudio: *See—*
Bargigia, Gianangelo; Tortelli, Vito; Tonelli, Claudio; and Modena, Silvana, 5,082,981, Cl. 570-156.000.

Bargigia, Gianangelo; Caporiccio, Gerardo; Tonelli, Claudio; Flabbi, Luciano; and Marchionni, Giuseppe, 5,083,082, Cl. 324-158.00F.

Tonkiss, David W.; and Young, Thomas F., to Joslyn Corporation. Two-piece retaining ring. 5,082,454, Cl. 439-320.000.

Tooher, Michael J.: *See*—
Lammerts, Judocus A. M.; Ritzerfeld, Willem G. J.; and Tooher, Michael J., 5,083,295, Cl. 365-205.000.

Topham, Anthony: *See*—
Allam, Rodney J.; and Topham, Anthony, 5,081,845, Cl. 62-24.000.

Tordeux, Marc: *See*—
Wakselman, Claude; Tordeux, Marc; Langlois, Bernard; Clavel, Jean-Louis; and Nantermet, Roland, 5,082,945, Cl. 548-110.000.

Torikai, Motoyuki: *See*—
Kitahara, Mikio; Machida, Koichi; Kubo, Takayuki; Torikai, Motoyuki; and Asahina, Koutarou, 5,082,880, Cl. 523-466.000.

Tornqvist, Peter J. T. Apparatus with two end positions generating a reciprocating motion. 5,082,067, Cl. 173-17.000.

Torres, Ramon L. Aircraft lock for radios, power controls, and flight controls and method. 5,082,213, Cl. 244-224.000.

Tortelli, Vito: *See*—
Bargigia, Gianangelo; Tortelli, Vito; Tonelli, Claudio; and Modena, Silvana, 5,082,981, Cl. 570-156.000.

Toshiba Ceramics Co., Ltd.: *See*—
Koseki, Tadao; Koseki, Akihiko; Hirata, Kohichi; and Itoh, Haruhiko, 5,082,484, Cl. 65-144.000.
Tashiro, Hiroshi; Nakamura, Yoshio; and Ohnishi, Masatoshi, 5,082,597, Cl. 252-516.000.

Tota, Padma V.: *See*—
Homeier, Edwin H.; Hennes, Peter O.; and Tota, Padma V., 5,082,569, Cl. 210-679.000.

Toth, David M.; and Riggs, William H., to Federal-Mogul Corporation. Heat conducting wear sleeve assembly for lubricant seals. 5,082,294, Cl. 277-37.000.

Toth, Jozsef: *See*—
Molnar, Csaba; Hajos, Gyorgy; Szporny, Laszlo; Toth, Jozsef; Kiraly, Arpad; Boor nee Mezei, Anna; Csorgei, Janos; Szekely, Kristina; Forgacs, Lilla; Fekete, Gyorgy; Herenyi, Bulcsu; Holly, Sandor; and Szunyog, Jozsef, 5,082,835, Cl. 514-180.000.

Tournaud, Alexis J.: *See*—
Robinson, Andrew J.; Gerstung, Carl H.; and Tournaud, Alexis J., 5,082,372, Cl. 366-167.000.

Towle, Ross A.: *See*—
Rau, Bantwal R.; and Towle, Ross A., 5,083,267, Cl. 395-375.000.

Toyo Boseki Kabushiki Kaisha: *See*—
Tsuzuki, Yasushi; Tanaka, Toshio; and Iizuka, Yasuhiro, 5,082,594, Cl. 252-502.000.

Toyoda Gosei Co., Ltd.: *See*—
Koizumi, Junji; and Yazaki, Yoshito, 5,082,889, Cl. 524-451.000.

Toyoda, Shuhei; Matsuzawa, Soichiro; and Ichinose, Masahiro, to NGK Insulators, Ltd. Optical unit having means for electrically shielding electrooptical. 5,083,221, Cl. 359-245.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Fukushima, Akira; Makino, Nobuhiko; Uchida, Kiyoyuki; Inoue, Hideo; and Sakai, Kazunori, 5,082,333, Cl. 303-96.000.
Kato, Sinji; Takagi, Soya; Kawasaki, Minoru; Mori, Kazuhiko; and Ueda, Katsuhiko, 5,082,625, Cl. 420-453.000.
Sadano, Yutaka; Nakashima, Yuuji; Tanaka, Takashi; Kawasaki, Takatoshi; Shibata, Shinji; Aoyagi, Hikaru; Nishizawa, Yoshio; and Kasahara, Akihiko, 5,082,167, Cl. 228-258.000.
Sugiyama, Toshihisa; Yoshioka, Mamoru; Nakata, Kunihiko; Miyake, Takashi; and Kidokoro, Toru, 5,081,842, Cl. 60-612.000.

Trampert, Rainer: *See*—
Kohler, Werner; Reinhardt, Dieter; Gramlich, Hermann; Schertz, Reinhart; Weissmann, Karl; and Trampert, Rainer, 5,082,367, Cl. 356-73.000.

Transit America, Inc.: *See*—
Pavlick, Michael J., 5,081,935, Cl. 105-224.100.

Transpan Company: *See*—
Lenmark, Voigt O., Sr.; and Koentopp, William A., 5,082,631, Cl. 422-102.000.

Travis, Samuel G., to Hea Associates, Inc. Method and apparatus for improving the performance of liquid waste evaporators. 5,082,525, Cl. 159-16.100.

Trenchbond Limited: *See*—
Carrol, Alan, 5,082,574, Cl. 210-787.000.

Trevett, Neil F.; and Wilson, Malcolm E., to Du Pont Pixel Systems Limited. State machine controlled video processor. 5,083,119, Cl. 340-723.000.

Triangle Biomedical Sciences, Inc.: *See*—
Hunnell, Jack E.; Hunnell, John E.; and Jackson, Thomas F., 5,082,254, Cl. 269-269.000.

Tribuzio, Pasquale; and Mercieri, Francesco N., to Bendix Altecna S.p.A. Load responsive brake regulator. 5,082,332, Cl. 303-9.730.

Trieselt, Wolfgang: *See*—
Oftring, Alfred; Birnbach, Stefan; Baur, Richard; Gousetis, Charalampos; and Trieselt, Wolfgang, 5,082,599, Cl. 252-546.000.

Troger, Wolfgang: *See*—
Weber, Karl-Heinz; Harreus, Albrecht; Casals-Stenzel, Jorge; Muacevic, Gojko; Troger, Wolfgang; and Walther, Gerhard, 5,082,839, Cl. 514-220.000.

Trovato, Karen I.; and Dorst, Leendert, to North American Philips Corporation. Path planning with transition changes. 5,083,256, Cl. 364-148.000.

Troy, Marc A., to Fredrick Ramond, Inc. Method and apparatus for retrofitting flush mount trim to existing recessed light fixture. 5,083,248, Cl. 362-147.000.

Trujillo, Aurielo: *See*—
Roy, Donald W.; Hastert, James L.; Green, Kenneth E.; Courbrough, Lawrence E.; and Trujillo, Aurielo, 5,082,739, Cl. 428-450.000.

Tsai, Wei C. Sanitary trash bin. 5,082,132, Cl. 220-23.830.

Tschida, Ernst: *See*—
Haas, Josef; and Tschida, Ernst, 5,082,357, Cl. 352-160.000.

Tse, Eric K. Y.: *See*—
Ryan, Paul; Tse, Eric K. Y.; and Lo, Carlo K. L., 5,082,286, Cl. 273-238.000.

Tsilibary, Photini-Effie C.: *See*—
Chelberg, Mary K.; Tsilibary, Photini-Effie C.; and McCarthy, James B., 5,082,926, Cl. 530-326.000.

Tsuboi, Takayuki, to Canon Kabushiki Kaisha. Driving power transmitting device for camera. 5,083,148, Cl. 354-400.000.

Tsubota, Hiroyuki: *See*—
Miki, Iyoko; Tsubota, Hiroyuki; Tsuchiko, Toshio; and Ochi, Hisashi, 5,082,769, Cl. 435-19.000.

Tsubota, Shunichi: *See*—
Chikamori, Takeshi; Ohkubo, Masaki; Kamisakamoto, Akira; Imai, Shoji; Tsubota, Shunichi; Uemura, Hideyuki; and Wakutani, Shinichi, 5,081,974, Cl. 123-478.000.

Tsuchiko, Toshio: *See*—
Miki, Iyoko; Tsubota, Hiroyuki; Tsuchiko, Toshio; and Ochi, Hisashi, 5,082,769, Cl. 435-19.000.

Tsuchiya, Haruhiko, to PFU Limited. Bus arbitration system for concurrent use of a system bus by more than one device. 5,083,260, Cl. 395-325.000.

Tsuchiya, Yutaka: *See*—
Aoshima, Shinichiro; Takahashi, Hironori; and Tsuchiya, Yutaka, 5,082,340, Cl. 359-328.000.

Tsuji, Kiyoshi, to United States of America, Navy. Low observability aperture design for expendable countermeasures devices. 5,083,128, Cl. 342-2.000.

Tsuji, Tetsurouo , to Mitsubishi Denki Kabushiki Kaisha. Electronic parts and electronic device incorporating the same. 5,083,237, Cl. 361-402.000.

Tsujimoto, Jun: *See*—
Sawada, Shigeru; Maruyama, Mitsuaki; Sawada, Kenji; Nakagawa, Hitoshi; Tsujimoto, Jun; Kasai, Shinichi; Takeshita, Masahiko; Kaneta, Satoshi; Koiwai, Masahiro; and Niki, Hiroshi, 5,083,170, Cl. 355-319.000.

Tsukagoshi, Norihiro: *See*—
Yamagata, Hideo; Kitamoto, Noriyuki; Kato, Takeo; Tsukagoshi, Norihiro; and Udaka, Shigezo, 5,082,781, Cl. 435-201.000.

Tsumuji, Akio: *See*—
Takahashi, Kaoru; Tsumuji, Akio; and Shutoku, Ryuji, 5,083,107, Cl. 340-506.000.

Tsuyama, Toshiaki; and Onaka, Toru, to Mazda Motor Corporation. Slip control apparatus of a vehicle. 5,082,081, Cl. 180-197.000.

Tsuyoshi, Toshiaki: *See*—
Shiiki, Kazuo; Shiroishi, Yoshihiro; Ohta, Norio; Tsuyoshi, Toshiaki; Takano, Hisashi; and Kugiya, Fumio, 5,083,226, Cl. 360-77.050.

Tsuyuguchi, Hiroshi; Syoji, Makoto; and Morita, Tsutomu, to Teac Corporation. Optical tracking servo apparatus. 5,083,302, Cl. 369-44.110.

Tsuzuki, Toshihiro: *See*—
Hirayama, Takanobu; Kinoshita, Naohisa; Kashima, Hiroyuki; Hasegawa, Makoto; Tsuzuki, Toshihiro; and Muto, Kiyoshi, 5,082,269, Cl. 271-65.000.
Kashima, Hiroyuki; Muto, Kiyoshi; Kinoshita, Naohisa; Tsuzuki, Toshihiro; and Hasegawa, Makoto, 5,083,158, Cl. 355-200.000.

Tsuzuki, Yasushi; Tanaka, Toshio; and Iizuka, Yasuhiro, to Toyo Boseki Kabushiki Kaisha. Material for polarizable electrode. 5,082,594, Cl. 252-502.000.

Tuan, Hsing C.: *See*—
Hack, Michael; Thompson, Malcolm J.; and Tuan, Hsing C., 5,083,175, Cl. 357-30.000.

Tucker, Richard B.; Davis, Jackie L.; and Lewis, Fielding H., Jr., to STX, Inc. Lacrosse stick. 5,082,290, Cl. 273-326.000.

Tuerkes, Peter; and Kuhnert, Reinhold, to Siemens Aktiengesellschaft. Thyristor having a low-reflection light-triggering structure. 5,083,177, Cl. 357-38.000.

Tulinius, Jan, to Rockwell International Corporation. Active flexible wing aircraft control system. 5,082,207, Cl. 244-76.00R.

Turgeon, Thomas A., to Minneapolis Mining and Manufacturing Company. Video cartridge adapter interlock system. 5,082,196, Cl. 242-199.000.

Turizo, Miguel: *See*—
Heindel, Ned D.; Turizo, Miguel; Burns, Hugh D.; and Balasubramanian, Venkataraman, 5,082,964, Cl. 558-270.000.

Turner, Ray B., Jr.: *See*—
Boyd, William G.; Barns, Willis E., Jr.; and Turner, Ray B., Jr., 5,081,822, Cl. 53-468.000.

Tyson, John, II; and Newman, John W., to Laser Technology, Inc. Apparatus and method for detecting leaks in packages. 5,082,366, Cl. 356-35.500.

T050832716g-Long: *See*—
Piotrowski, Chester; Bruzzone, Charles L.; T050832716g-Long; and McAllister, Jerome W., 5,083,112, Cl. 340-572.000.

Ube Industries, Ltd.: *See*—
Ueno, Kouhei; Akagawa, Tomohiko; and Obana, Kazuyoshi, 5,082,646, Cl. 423-554.000.
Uchida, Kazuhiro; and Yamamoto, Kikuo, to Sony Corporation. Tracking error detecting circuit. 5,083,228, Cl. 360-77.140.
Uchida, Kiyoyuki: *See*—
Fukushima, Akira; Makino, Nobuhiko; Uchida, Kiyoyuki; Inoue, Hideo; and Sakai, Kazunori, 5,082,333, Cl. 303-96.000.
Uchida, Naoshi: *See*—
Takahashi, Tatsunori; Unuma, Makoto; and Uchida, Naoshi, 5,082,996, Cl. 200-401.000.
Uchida, Tatsuro; and Yamada, Yoshio, to Ishikawa Gasket Co., Ltd. Steel laminate gasket with seal protecting member. 5,082,298, Cl. 277-235.00B.
Uchikawa, Yoshio: *See*—
Fukushima, Satoru; Takeda, Kenichi; Takeda, Atsushi; Uchikawa, Yoshio; and Hasegawa, Takashi, 5,083,167, Cl. 355-274.000.
Uchimura, Mitsuo: *See*—
Matsumoto, Kazuji; Uchimura, Mitsuo; Shiozaki, Tsugio; Koizumi, Osamu; Sugiura, Ikuzo; and Sugimoto, Yoshihiko, 5,082,273, Cl. 271-215.000.
Uchiyama, Isao: *See*—
Tanaka, Kouichi; and Uchiyama, Isao, 5,081,795, Cl. 51-131.100.
Udaka, Shigezo: *See*—
Yamagata, Hideo; Kitamoto, Noriyuki; Kato, Takeo; Tsukagoshi, Norihiro; and Udaka, Shigezo, 5,082,781, Cl. 435-201.000.
Udipi, Kishore, to Monsanto Company. Polymer blends of polycarbonate, PCTG and ABS. 5,082,897, Cl. 525-67.000.
Ueba, Yoshinobu; Mishima, Takayuki; and Saito, Gunzi, to Sumitomo Electric Industries, Ltd. Process for producing organic electrical conductor. 5,082,687, Cl. 427-62.000.
Ueda, Eiji; and Umeda, Noriaki, to Asahi Kasei Kogyo Kabushiki Kaisha. Rubber particles for resin reinforcement and reinforced resin composition. 5,082,732, Cl. 428-402.000.
Ueda, Katsuhiko: *See*—
Kato, Sinji; Takagi, Soya; Kawasaki, Minoru; Mori, Kazuhiko; and Ueda, Katsuhiko, 5,082,625, Cl. 420-453.000.
Ueda, Kenichi: *See*—
Awaji, Toshio; Ueda, Kenichi; and Atobe, Daisuke, 5,082,598, Cl. 525-518.000.
Ueda, Shiro: *See*—
Sumimoto, Shinzaburo; Ishizuka, Ichiro; Ueda, Shiro; and Kai, Hiroyuki, 5,082,947, Cl. 548-243.000.
Ueda, Tetsuya, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device. 5,083,191, Cl. 357-68.000.
Ueda, Toshiaki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens camera. 5,083,146, Cl. 354-149.100.
Ueda, Yoshikazu: *See*—
Ishida, Takashi; Ueda, Yoshikazu; Kubota, Teruji; Igarashi, Misao; Tanaka, Norichika; and Kamijo, Yasuhiko, 5,081,937, Cl. 110-246.000.
Uematsu, Nobuyuki: *See*—
Iwaki, Takashi; Itou, Kazunori; Matsumoto, Hiroshi; Suzuki, Hiroyuki; Shibata, Juzo; and Uematsu, Nobuyuki, 5,082,048, Cl. 165-1.000.
Uemura, Hideyuki: *See*—
Chikamori, Takeshi; Ohkubo, Masaki; Kamisakamoto, Akira; Imai, Shoji; Tsubota, Shunichi; Uemura, Hideyuki; and Wakutani, Shinichi, 5,081,974, Cl. 123-478.000.
Uemura, Noboru: *See*—
Satoh, Takateru; Tanaka, Kimio; Shiba, Haruo; Uemura, Noboru; and Akaoka, Kenkichi, 5,082,197, Cl. 242-199.000.
Ueno, Katsumi, to Diesel KiKi Co., Ltd. Hydraulic control circuit. 5,081,837, Cl. 60-421.000.
Ueno, Kiyoshi: *See*—
Ushigami, Yoshiyuki; Konno, Toyohiko; Suga, Yozo; Ueno, Kiyoshi; Itoh, Mikio; Nishiyama, Toshio; and Takimoto, Kenichi, 5,082,509, Cl. 148-111.000.
Ueno, Kouhei; Akagawa, Tomohiko; and Obana, Kazuyoshi, to Ube Industries, Ltd. Fibrous magnesium oxysulfate of granular form and a method of producing same. 5,082,646, Cl. 423-554.000.
Uetake, Naohito; Sekine, Ietsugu; Hasimoto, Haruo; Fukasawa, Tetsuo; and Iba, Hajime, to Hitachi, Ltd. Process and apparatus for regenerating spent reprocessing extraction solvent. 5,082,602, Cl. 252-627.000.
Umeda, Noriaki: *See*—
Ueda, Eiji; and Umeda, Noriaki, 5,082,732, Cl. 428-402.000.
Umeda, Takashi; Kanemitsu, Norihiro; Murakami, Kousuke; Takahara, Kuniaki; and Sakurai, Ushio, to Mazda Motor Corporation. Structure of a front body of a motor vehicle and a method of assembling a vehicle body. 5,082,078, Cl. 180-90.000.
Umetsu, Hiroshi: *See*—
Imai, Kyoko; Nomura, Yasushi; and Umetsu, Hiroshi, 5,083,283, Cl. 364-497.000.
Umezu, Kohei: *See*—
Taniguchi, Masao; Umezu, Kohei; Shirasaka, Tadashi; Inoue, Shinya; Shinpuku, Tetsuro; Mitsuka, Masayuki; and Hirata, Mayumi, 5,082,856, Cl. 514-423.000.
Umino, Mitsugu: *See*—
Yamakita, Yoshimichi; and Umino, Mitsugu, 5,081,731, Cl. 8-151.000.
Unilever Patent Holdings B.V.: *See*—
Newman, Christopher P., 5,082,979, Cl. 568-782.000.
Overbeeke, Nicolaas; Fellinger, Arthur J.; and Hughes, Stephen G., 5,082,778, Cl. 435-172.300.
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Schilling, Curtis L., Jr., 5,082,962, Cl. 556-479.000.
Union Oil Company of California: *See*—
Gallup, Darrell L.; Featherstone, John L.; Reverente, Jessie P.; and Messer, Philip H., 5,082,492, Cl. 75-712.000.
Shen, Jian-Chyun, 5,082,499, Cl. 106-735.000.
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Goerens, Robert L., 5,082,711, Cl. 428-90.000.
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Schwanke, Robert E.; and Icuss, James C., 5,083,299, Cl. 368-113.000.
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Newman, Jeffrey D.; Pirzad, Ramin; Cowell, David C.; and Dowman, Antony A., 5,082,540, Cl. 204-153.130.
Wight, David R.; Heaton, John M.; Lewis, Meirion F.; and West, Christopher L., 5,082,342, Cl. 385-8.000.
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Agriculture: *See*—
Dowd, Patrick F.; Bartelt, Robert J.; and Wicklow, Donald T., 5,081,788, Cl. 43-107.000.
Hamada, Jamel S.; and Marshall, Wayne E., 5,082,672, Cl. 426-7.000.
Inglett, George E., 5,082,673, Cl. 426-21.000.
Martin, Charles R.; Rousser, Robert; and Brabec, Daniel L., 5,082,141, Cl. 221-278.000.
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Schechter, Stuart E.; and Leyenaar, Antonio R., 5,081,865, Cl. 73-65.000.
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Merten, Charles W., Jr., 5,081,862, Cl. 73-37.000.
Partin, Judy K.; Ward, Thomas E.; and Grey, Alan E., 5,082,630, Cl. 422-83.000.
Rishpon, Judith; Zawodzinski, Thomas A.; and Gottesfeld, Shimshon, 5,082,550, Cl. 204-403.000.
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Glaser, Robert A., 5,081,871, Cl. 73-863.230.
Pastan, Ira; FitzGerald, David; and Ogata, Masato, 5,082,927, Cl. 530-351.000.
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Steinetz, Bruce M.; and Strocky, Paul J., 5,082,293, Cl. 277-3.000.
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Bein, Thomas W., 5,082,431, Cl. 418-97.000.
Ferrando, William A., 5,082,826, Cl. 505-1.000.
Gray, Roger L., 5,082,200, Cl. 244-3.150.
Hardt, Lee R.; and Means, James E., 5,083,041, Cl. 290-52.000.
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Jacobson, Michael D., 5,082,202, Cl. 244-322.000.
Kub, Francis J., 5,083,174, Cl. 357-27.000.
Tsuji, Kiyoshi, 5,083,128, Cl. 342-2.000.
U.S. Philips Corporation: *See*—
Eguchi, Shuji; Kloosterboer, Johan G.; and Broer, Dirk J., 5,082,559, Cl. 210-198.200.
Fuchs, Manfred H.; Hoppe, Wolfgang; Beckmann, Friedrich-Karl; Brinkmeyer, Ernst; and Brennecke, Wolfgang, 5,082,368, Cl. 356-73.100.
Hoogendoorn, Abraham; and Lokhoff, Gerardus, 5,083,224, Cl. 360-60.000.
Kahlman, Josephus A. H. M., 5,083,227, Cl. 360-77.130.
Lammerts, Judocus A. M.; Ritzerfeld, Willem G. J.; and Tooher, Michael J., 5,083,295, Cl. 365-205.000.
Lindner, Helmut; Wenzel, Norbert; Herff, Robert; and Schmitz, Hans-Joachim, 5,082,379, Cl. 385-101.000.
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Dunklee, Douglas M., 5,082,112, Cl. 206-363.000.
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Richardson, Robert D.; and Erdman, William L., 5,083,039, Cl. 290-44.000.
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Bruchez, Raymond J., Jr.; Mount, George E.; Dixon, James T.; Hagerman, Russell H.; Movick, Wayne K.; Arena, Aldo; and Stewart, Jim D., 5,082,182, Cl. 239-265.350.
Ewing, Joseph H., Jr., 5,081,835, Cl. 60-230.000.
Keyser, Andrew G., 5,082,209, Cl. 244-110.00B.
Schwarz, Frederick M.; Crawley, Clifton J., Jr.; and Rauseo, Anthony F., 5,081,830, Cl. 60-39.020.
Witthoft, Carl G.; Wirth, Allan; and Schmutz, Lawrence, 5,083,015, Cl. 250-201.900.
University of Akron: *See*—
Chaung, Steven S. C., 5,082,977, Cl. 568-454.000.
University of Arkansas: *See*—
Hermann, Allen M.; and Sheng, Zhengzhi, 5,082,825, Cl. 505-1.000.
University of California, The Regents of the: *See*—
Gage, Fred H.; Rosenberg, Michael B.; and Friedmann, Theodore, 5,082,670, Cl. 424-520.000.
University of Colorado Foundation, Inc.: *See*—
Barnes, Frank S., 5,082,827, Cl. 505-1.000.
University of Florida Research Foundation, Inc.: *See*—
Boyle, Michael D. P.; and Yarnall, Michele, 5,082,931, Cl. 530-413.000.

University of Maryland: *See—*
Zaki, Kawthar A., 5,083,102, Cl. 333-212.000.
University of Minnesota, Regents of the: *See—*
Chelberg, Mary K.; Tsilibary, Photini-Effie C.; and McCarthy, James B., 5,082,926, Cl. 530-326.000.
University of New Mexico, The: *See—*
Bolie, Victor W., 5,083,097, Cl. 331-6.000.
Paine, Robert T., Jr.; Narula, Chaitanya K.; and Schaeffer, Riley O., 5,082,693, Cl. 427-226.000.
University of Oklahoma, Board of Regents of the: *See—*
Hemstreet, George P.; Love, Tom J., Jr.; and Bergey, Karl H., 5,081,999, Cl. 128-750.000.
University of Toledo, The: *See—*
Davies, Julian A.; and Dutremez, Sylvain, 5,082,812, Cl. 501-137.000.
University of Utah: *See—*
Bunger, James W.; Ryu, Hoil; and Devineni, Prasad A. V., 5,082,644, Cl. 423-497.000.
University of Washington, The Board of the: *See—*
Burgess, Lloyd W., Jr.; and Goldman, Don S., 5,082,629, Cl. 422-82.110.
Unuma, Makoto: *See—*
Takahashi, Tatsunori; Unuma, Makoto; and Uchida, Naoshi, 5,082,996, Cl. 200-401.000.
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Homeier, Edwin H.; Hennes, Peter O.; and Tota, Padma V., 5,082,569, Cl. 210-679.000.
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Uosaki, Yohichi: *See—*
Nakano, Hirofumi; Hara, Mitsunobu; Uosaki, Yohichi; Kawamoto, Isao; Takahashi, Keiiechi; and Gomi, Katsushige, 5,082,857, Cl. 514-453.000.
Up-Right, Inc.: *See—*
Ream, Michael D.; and Claxton, Gerald L., 5,082,085, Cl. 182-2.000.
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Wakatsuki, Masao; Takano, Kaoru; Kitagawa, Kazuo; Urabe, Katsufumi; and Ishida, Toshimitsu, 5,082,635, Cl. 422-245.000.
Urabe, Toskhiaki: *See—*
Nishimoto, Akihiko; Hosoya, Yoshihiro; and Urabe, Toskhiaki, 5,082,510, Cl. 148-111.000.
Uretzky, Gideon: *See—*
Appelbaum, Jerachmiel Y.; Chevion, Mordechai; and Uretzky, Gideon, 5,082,851, Cl. 514-332.000.
Urich, Oren D., to Sterling Grinding Company, Inc. Apparatus for processing material. 5,082,188, Cl. 241-56.000.
Urological Instruments Research, Inc.: *See—*
Borodulin, German; Persidsky, Maxim; and Shkolnik, Alexander, 5,081,985, Cl. 128-32.000.
Urso, Charles J.: *See—*
Corona, Stephen C.; Charnitski, George A.; Lehman, Richard F.; and Urso, Charles J., 5,083,159, Cl. 355-208.000.
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Ushigami, Yoshiyuki; Konno, Toyohiko; Suga, Yozo; Ueno, Kiyoshi; Itoh, Mikio; Nishiyama, Toshio; and Takimoto, Kenichi, to Nippon Steel Corporation. Method of producing oriented electrical steel sheet having superior magnetic properties. 5,082,509, Cl. 148-111.000.
Usinor Sacilor: *See—*
Blin, Philippe, 5,082,046, Cl. 164-428.000.
Usui, Noriyuki; and Endo, Hidenobu, to Ricoh Company, Ltd. Device for removing deposits from a photoconductive element of an image recorder which is movable between a cleaning and non-cleaning position. 5,083,169, Cl. 355-296.000.
UTDC Inc.: *See—*
Lapp, Steven P.; and Timan, Peter E., 5,081,933, Cl. 105-3.000.
Utida, Sirou; and Narita, Tosio, to Isuzu Jidosha Kabushiki Kaisha; and Narita, Tosio. Method of joining ceramics and metal with Ti-Co braze and Ni. 5,082,161, Cl. 228-122.000.
Utunomiya, Jiro; Iida, Saburo; Sibuya, Hitosi; Kusaba, Kazunori; and Narumi, Isao, to Oki Electric Industry Co., Ltd. Terminal structure and process of fabricating the same. 5,081,764, Cl. 29-843.000.
Uytterhoeven, Herman J.; and Van Thillo, Etienne A., to AGFA-Gevaert, N.V. Subbing layer for dye-donor element used in thermal dye transfer. 5,082,822, Cl. 503-227.000.
V Tech Corporation: *See—*
Rerat, Carlos F., 5,082,491, Cl. 75-255.000.
Vadnere, Madhu K.: *See—*
Hui, Ho-Wah; Hsu, Chung-Chiang; and Vadnere, Madhu K., 5,082,656, Cl. 514-24.000.
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Loth, Myriam; Blanvalet, Claude; and Valange, Baudouin, 5,082,584, Cl. 252-122.000.
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Micheels, Ronald H.; Valdivia, Percy; and Hanoka, Jack I., 5,082,791, Cl. 437-2.000.
Valentine, Michael D.; Groth, Clarence R.; Scholl, Stephen R.; and Nusair, Marwan E., to Valentine Research, Inc. Police radar detector for detecting radar signals and determining the directional origin of the signal source. 5,083,129, Cl. 342-20.000.
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Valentine, Michael D.; Groth, Clarence R.; Scholl, Stephen R.; and Nusair, Marwan E., 5,083,129, Cl. 342-20.000.
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Valeo Systemes d'Essuyage: *See—*
Schon, Monsieur W., 5,081,736, Cl. 15-250.350.
Valiant, Leslie G., to President and Fellows of Harvard College. Bulk-synchronous parallel computer. 5,083,265, Cl. 395-800.000.
Valkonen, Ilkka: *See—*
Rintala, Kari; Paarma, Jyrki; Sissala, Mikko; Valkonen, Ilkka; and Kokko, Pekka, 5,082,118, Cl. 209-599.000.
Valmet-Karhula Inc.: *See—*
Keskiivari, Juha; Rommi, Vesa; Rosendal, Timo; Virkkunen, Teuvo; and Virtamo, Veijo, 5,082,530, Cl. 162-216.000.
Valspar Corporation, The: *See—*
Brandenburger, Larry B.; and Ruhoff, Philip J., 5,082,922, Cl. 528-323.000.
Valyi, Emery I. Extrusion of plastics. 5,082,604, Cl. 264-40.500.
Van den Bergh Foods Co., Division of Conopco, Inc.: *See—*
Marceau, Daniel, 5,082,104, Cl. 198-419.300.
Vance Products Incorporated: *See—*
Bosley, Rodney W., Jr.; Thomson, Paul G.; and Foster, Thomas L., 5,081,997, Cl. 128-662.020.
Van den Oetelaar, Petrus J. M.; and Mentink, Maria M. F., to Akzo N.V. Stabilized solutions of psychotropic agents. 5,082,864, Cl. 514-646.000.
van der Ent, Hans. Multiple article stacking and packaging apparatus. 5,081,823, Cl. 53-501.000.
VanDeripe, Donald R., to Mallinckrodt Medical, Inc. Method for enhancing the safety of metal-ligand chelates as magnetic resonance imaging agents by addition of calcium ions. 5,082,649, Cl. 424-9.000.
van Dijk, Wietse: *See—*
Carrell, Rebecca S.; van Dijk, Wietse; Goddard, Mervyn R.; and Hayes, John B., 5,082,674, Cl. 426-52.000.
Van Dongen, David B., to Warner-Lambert Company. Cone-shaped apparatus for tempering boiled candy. 5,081,919, Cl. 99-483.000.
Van Kao, Sheau: *See—*
Sacripante, Guerino; McAneney, T. Brian; Drappel, Stephan; Van Kao, Sheau; and Alexandru, Lupu, 5,082,919, Cl. 528-176.000.
Van Konynenburg, Richard: *See—*
Walter, Carl E.; Van Konynenburg, Richard; and VanSant, James H., 5,082,617, Cl. 376-184.000.
Vanmaele, Luc J.; and Janssens, Wilhelmus, to Agfa-Gevaert, N.V. Cyan dyes for use in thermal dye sublimation transfer. 5,082,823, Cl. 503-227.000.
Van Mao, Raymond L. Soil conditioning. 5,082,488, Cl. 71-62.000.
Vannier, Michael W.; Groszewski, Paul G.; and Grasse, Pamela J. Enhanced computer based upper extremity evaluation system. 5,082,001, Cl. 128-774.000.
VanSant, James H.: *See—*
Walter, Carl E.; Van Konynenburg, Richard; and VanSant, James H., 5,082,617, Cl. 376-184.000.
Van Scoik, Kurt G., to Abbott Laboratories. Solid pharmaceutical dosage in tablet triturate form and method of producing same. 5,082,667, Cl. 424-469.000.
Van Thillo, Etienne A.: *See—*
Uytterhoeven, Herman J.; and Van Thillo, Etienne A., 5,082,822, Cl. 503-227.000.
Van Valkenburg, Stephen H.: *See—*
Sutton, James L.; and Van Valkenburg, Stephen H., 5,082,403, Cl. 408-68.000.
VanWert, Bernard; and Houghtaling, Dawn M., to Dow Corning Corporation. Storage stable one-part organosiloxane compositions. 5,082,894, Cl. 524-730.000.
Vara, Fulvio J.: *See—*
Liu, Kou-Chang; Vara, Fulvio J.; and Dougherty, James A., 5,082,874, Cl. 522-100.000.
Varaprath, Padmakumari J.: *See—*
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Vareille, Jean-Claude: *See—*
Decossas, Jean-Louis; Vareille, Jean-Claude; Barthe, Jean; and Portal, Guy, 5,083,028, Cl. 250-390.030.
Vargas, Anthony: *See—*
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Varian Associates, Inc.: *See—*
Adler, Richard J.; and Nylander, R. Fred, 5,083,093, Cl. 328-65.000.
Wells, Gregory J.; and Bolton, Barbara A., 5,083,004, Cl. 219-121.500.
Vasile, Carmine F., to Grumman Aerospace Corporation. Modified cascode mixer circuit. 5,083,050, Cl. 307-529.000.
Vaughn, George D., to Monsanto Company. Catalytic, water-soluble polymeric films for metal coatings. 5,082,734, Cl. 428-411.100.
Vaughn, Walter L.: *See—*
Patton, Robert T.; Hall, David M.; and Vaughn, Walter L., 5,082,697, Cl. 427-340.000.
VEB Spezialbaukombinat Magdeburg: *See—*
Schweder, Herbert; Lochl, Klaus; Rausch, Wolfgang; Hannemann, Freidrich; Leitmont, Helmut; Hahn, Ditmar; and Itziegehl, Kurt, 5,082,441, Cl. 432-75.000.
Veenstra, Kevin C.; and Clark, Jon R., to Minnesota Mining and Manufacturing Company. Ribbed cleaning apparatus for disk cartridges. 5,083,231, Cl. 360-133.000.
Vega, James S. Free standing bike rack. 5,082,120, Cl. 211-20.000.
Veilleux, Leo. Plow attaching device and method. 5,081,775, Cl. 37-197.000.

Velbon International Corporation: *See*—
Nakatani, Koichiro, 5,083,147, Cl. 354-293.000.

Vermilyea, Mark E.: *See*—
Herd, Kenneth G.; Laskaris, Evangelos T.; and Vermilyea, Mark E., 5,083,105, Cl. 335-216.000.

Vernon, Curtis L.: *See*—
Montgomery, James M.; and Vernon, Curtis L., 5,082,272, Cl. 271-186.000.

Verny, Tom, to Verny, Tom; and Hughes, Ivor M. Anti-snoring formulations using yohimbine. 5,082,665, Cl. 424-464.000.

Vezain, Gerard; Auternaud, Jacques; and Viale, Daniel, to Societe Nationale Industrielle et Aerospatiale. Torque limiter device and deployable lengthening piece of a space instrument equipped with this device. 5,082,212, Cl. 244-173.000.

Vgarkar, Bheemaro G.: *See*—
Gruber, Harry E.; Browne, Clinton E.; Vgarkar, Bheemaro G.; and Reich, Jack W., 5,082,829, Cl. 514-43.000.

Via, Ronald B.: *See*—
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Viale, Daniel: *See*—
Vezain, Gerard; Auternaud, Jacques; and Viale, Daniel, 5,082,212, Cl. 244-173.000.

Vialy, Roger. Quick-break miniature switch. 5,082,997, Cl. 200-452.000.

Vibrosystem S.r.l.: *See*—
Brusati, Ernesto; and Garioni, Alessandro, 5,081,773, Cl. 34-205.000.

Vickers Shipbuilding & Engineering Limited: *See*—
Paterson, John R.; and Warren, Leonard, 5,082,995, Cl. 174-113.00R.

Victor Company of Japan, Ltd.: *See*—
Morisaki, Kazuhiko; and Inoue, Yasuo, 5,083,225, Cl. 360-64.000.

Vierikko, Pentti, to Oy Erco-Mek AB. Forest harvester. 5,082,036, Cl. 144-3.00D.

Vilbois, Vincent: *See*—
Le Bars, Jean-Francois; Vilbois, Vincent; and Dez, Oliver, 5,082,201, Cl. 244-3.160.

Villalta, Josue J.; and Passemard, Jean R. Medical retractor device. 5,081,983, Cl. 128-20.000.

Virkkunen, Teuvo: *See*—
Keskiivari, Juha; Rommi, Vesa; Rosendal, Timo; Virkkunen, Teuvo; and Virtamo, Veijo, 5,082,530, Cl. 162-216.000.

Virtamo, Veijo: *See*—
Keskiivari, Juha; Rommi, Vesa; Rosendal, Timo; Virkkunen, Teuvo; and Virtamo, Veijo, 5,082,530, Cl. 162-216.000.

Vishnauski, Jon M.: *See*—
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Vlaanderen, James, to Stellar Industries, Inc. Accessory for a vehicle having a hydraulic loader. 5,082,417, Cl. 414-498.000.

Vlach, Frank: *See*—
Hemphill, Charles T.; and Vlach, Frank, 5,083,268, Cl. 395-12.000.

Vollmer, Hermann: *See*—
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Vollrath Company, Inc., The: *See*—
Beyer, Peter E.; and Moran, Robert E., Jr., 5,082,334, Cl. 312-140.400.

Von Roll Transportsysteme AG: *See*—
Hofmann, Gottfried, 5,081,932, Cl. 104-112.000.

Voss, Hartwig; Kneifel, Klemens; and Martens, Uwe, to Forschungszentrum Geesthacht GmbH. Membrane stack unit for multichamber processes. 5,082,549, Cl. 204-301.000.

Voth, Allen J.: *See*—
Steiner, Robert L.; Holzner, Charles R., Sr.; and Voth, Allen J., 5,082,150, Cl. 222-189.000.

VSI Corporation: *See*—
Cosenza, Frank J., 5,082,406, Cl. 411-105.000.

Vuillemin, Jacques: *See*—
Baron, Gerard; and Vuillemin, Jacques, 5,081,791, Cl. 47-66.000.

Vuocolo, Edmund: *See*—
Brakel, Christine L.; Cook, Alan F.; and Vuocolo, Edmund, 5,082,830, Cl. 514-44.000.

W.R. Grace & Co.-Conn: *See*—
Bansleben, Donald A.; Daly, Joseph M.; and Zavadsky, Emil, 5,082,878, Cl. 523-203.000.

W. Schlafhorst AG & Co.: *See*—
Grecksch, Hans; Engelhardt, Dietmar; Ruth, Gregor; and Haasen, Rolf, 5,082,194, Cl. 242-35.60R.

Wacker Corporation: *See*—
Polacek, Manfred, 5,082,396, Cl. 404-117.000.

Waite, Dennis J.: *See*—
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Wakamiya, Koichi: *See*—
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Wakatsuki, Masao; Takano, Kaoru; Kitagawa, Kazuo; Urabe, Katsufumi; and Ishida, Toshimitsu, to Kabushiki Kaisha Kobe Seiko Sho. High-pressure crystallographic observation apparatus. 5,082,635, Cl. 422-245.000.

Wakatsuki, Yuji; Kondo, Shigekazu; Takaoka, Mitsuyuki; Hirosawa, Masaru; and Suzuki, Nobuya, to Hoshizaki Denki Kabushiki Kaisha. Refrigerator. 5,081,850, Cl. 62-405.000.

Wakselman, Claude; Tordeux, Marc; Langlois, Bernard; Clavel, Jean-Louis; and Nantermet, Roland, to Rhone-Poulenc Agrochimie. Process for the preparation of perhaloalkylthioethers. 5,082,945, Cl. 548-110.000.

Wakugawa, Jason M.: *See*—
Ali, Mir A.; Robbins, Ronald E.; and Wakugawa, Jason M., 5,082,805, Cl. 501-91.000.

Wakutani, Shinichi: *See*—
Chikamori, Takeshi; Ohkubo, Masaki; Kamisakamoto, Akira; Imai, Shoji; Tsubota, Shunichi; Uemura, Hideyuki; and Wakutani, Shinichi, 5,081,974, Cl. 123-478.000.

Waldron, Chris R.: *See*—
Cekander, John W.; Redder, Doug J.; and Waldron, Chris R., 5,082,322, Cl. 296-97.900.

Walker, Evo M., to Taylor Machine Works, Inc. Stacking mast for a lift truck. 5,082,090, Cl. 187-9.00E.

Walker, Robert G., to GEC-Marconi Limited. Integrated optical device with zero-gap and well-spaced regions. 5,082,341, Cl. 385-14.000.

Walker, Robert W.; Karp, Ricki S.; and Hayter, John S., to Britcanus Corporation. Interactive telephone lottery system with a verification code. 5,083,272, Cl. 364-412.000.

Walker, Roy G., to Westinghouse Electric Corp. Process of regenerating spent HF-HNO_3 pickle acid containing $(ZrF_6)^{-2}$. 5,082,523, Cl. 156-642.000.

Wallace, Alan; and Spee, Rene , to State of Oregon Acting by and through the State Board of Higher Education on Behalf of Oregon State University, The. Brushless doubly-fed generation system for vehicles. 5,083,077, Cl. 322-32.000.

Walles, Wilhelm E.; Achille, Felix; Fiero, Terry H.; Gregory, Steve D.; Kirch, Timothy O.; and Stevens, Bradley D., to Dow Chemical Company, The. Plastic clad metal laminate for heat transfer partitions. 5,082,740, Cl. 428-461.000.

Walsh, James B. Bookmark. 5,081,948, Cl. 116-235.000.

Walter, Carl E.; Van Konynenburg, Richard; and VanSant, James H., to United States of America, Energy. Thulium-170 heat source. 5,082,617, Cl. 376-184.000.

Walters, Craig E.; Bravender, Victoria H.; and Shuhi, Carl J., to Warr Valves, Inc. Intake valve for internal combustion engine. 5,081,965, Cl. 123-188.0AA.

Walther, Gerhard: *See*—
Weber, Karl-Heinz; Harreus, Albrecht; Casals-Stenzel, Jorge; Muacevic, Gojko; Troger, Wolfgang; and Walther, Gerhard, 5,082,839, Cl. 514-220.000.

Wang, Austin. Putting practice device. 5,082,280, Cl. 273-179.00C.

Wang, Pen C., to Shell Oil Company. Crosslinked polycyanato spirodilactam resin. 5,082,923, Cl. 528-323.000.

Wang, Sui-Mu. Illuminative fan. 5,082,422, Cl. 416-5.000.

Ward, Brian J.: *See*—
Jeram, Edward M.; Ward, Brian J.; and Martin, Donald A., 5,082,886, Cl. 524-403.000.

Ward Holding Company, Inc.: *See*—
Harrison, John R., 5,081,928, Cl. 101-351.000.

Ward, Thomas E.: *See*—
Partin, Judy K.; Ward, Thomas E.; and Grey, Alan E., 5,082,630, Cl. 422-83.000.

Wardlaw, Russell, to Cookson Company, The. Release mechanism and method with alarm circuit. 5,082,316, Cl. 292-201.000.

Wardle, John W.; Sievert, Dale W.; and Leeson, James L., deceased (by Leeson, Elizabeth J., on behalf of the Deceased), to Woodward Governor Company. Multiplexed hydraulic control system with multi-bit binary selector signal control. 5,081,903, Cl. 91-361.000.

Warman International, Inc.: *See*—
Owens, Brian S.; and Kimpel, Alvin A., 5,082,247, Cl. 251-326.000.

Warner, Gary N.: *See*—
Mulholland, Denis G.; Schaffer, Ronald R.; and Warner, Gary N., 5,082,344, Cl. 385-60.000.

Warner-Lambert Company: *See*—
Boyd, William G.; Barns, Willis E., Jr.; and Turner, Ray B., Jr., 5,081,822, Cl. 53-468.000.
Cherukuri, Subraman R., 5,082,671, Cl. 426-3.000.
Pan, Pauline E.; and Sturdivant, Linda D., 5,082,653, Cl. 424-54.000.
Van Dongen, David B., 5,081,919, Cl. 99-483.000.

Warner, Louis E., Jr. Delivering device and affiliated receiving bowl for feeding and watering pets. 5,081,957, Cl. 119-61.000.

Warr Valves, Inc.: *See*—
Walters, Craig E.; Bravender, Victoria H.; and Shuhi, Carl J., 5,081,965, Cl. 123-188.0AA.

Warren, Charles C., Sr.; and Warren, Shirley J. Safety plug with ground lock and prong locks. 5,082,450, Cl. 439-102.000.

Warren, Harold C., III; and Oakes, Fred T., to Eastman Kodak Company. Oligonucleotide-enzyme conjugate that can be used as a probe in hybridization assays and polymerase chain reaction procedures. 5,082,780, Cl. 435-191.000.

Warren, Leonard: *See*—
Paterson, John R.; and Warren, Leonard, 5,082,995, Cl. 174-113.00R.

Warren, Shirley J.: *See*—
Warren, Charles C., Sr.; and Warren, Shirley J., 5,082,450, Cl. 439-102.000.

Warszawski, Bernard, to Alpine Polyvision, Inc. Technique for manufacturing a light modulating device. 5,082,355, Cl. 359-265.000.

Washington University: *See*—
Heuckeroth, Robert O.; Adams, Steven P.; Gordon, Jeffrey I.; and Gokel, George W., 5,082,967, Cl. 562-512.000.

Waste-Not, Inc.: *See*—
Quam, Roger C., 5,082,139, Cl. 220-530.000.

Watabe, Yoshiharu: *See*—
Takano, Kohzoh; Oyobiki, Yoshinori; Watabe, Yoshiharu; and Kondo, Yasuo, 5,081,889, Cl. 82-122.000.

Watanabe, Hideo: *See*—
Komatsu, Katsuaki; and Watanabe, Hideo, 5,083,171, Cl. 357-15.000.
Watanabe, Hideomi; Ohno, Mikio; Hashimoto, Hiroshi; and Okita, Tsutomu, to Fuji Photo Film Co., Ltd. Magnetic recording medium containing magnetic particles surface treated with a glycidyl compound. 5,082,733, Cl. 428-403.000.
Watanabe, Hiroyoshi: *See*—
Komiyama, Tadashi; Kuboyama, Hisaharu; Jimbo, Takashi; Watanabe, Hiroyoshi; Tokumoto. Shuichi; Endoh, Yumiko; Sugiyama, Eiichi; and Naganuma, Yoshitaro, 5,082,972, Cl. 564-480.000.
Watanabe, Kazuo: *See*—
Sato, Toshiyuki; Hashimoto, Hiroyuki; and Watanabe, Kazuo, 5,083,156, Cl. 355-91.000.
Watanabe, Kunihiko: *See*—
Hiyoshi, Teruo; Suzuki, Hideo; Aoki, Eiichiro; Nakada, Akira; Kumano, Shinji; Watanabe, Kunihiko; and Sakama, Masao, 5,081,896, Cl. 84-600.000.
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Watanabe, Nobuhisa: *See*—
Kuramitsu, Mikihiro; Kabasawa, Junichi; and Watanabe, Nobuhisa, 5,082,435, Cl. 425-117.000.
Watanabe, Takenori: *See*—
Koga, Minoru; Watanabe, Takenori; Kamata, Toshio; Morishima, Satoshi; Mizusawa, Minoru; and Kobayashi, Kazunori, 5,082,752, Cl. 429-20.000.
Watkins, Randolph H.: *See*—
Sluga, Robert M.; Watkins, Randolph H.; Fisher, Jerry D.; Berry, Dennis C.; and Eldridge, Milo, 5,082,503, Cl. 134-26.000.
Watson, Alan K.; and Wymore, Lee A., to Royal Institution for the Advancement of Learning (McGill University), The. Composition for biocontrol of wild buckwheat. 5,082,489, Cl. 71-79.000.
Watson, Jack S., to United States of America, Energy. Method and apparatus for continuous electrophoresis. 5,082,541, Cl. 204-180.100.
Watson, William D.: *See*—
Lissaman, Peter B. S.; Drees, Herman M.; Sink, Charles J.; and Watson, William D., 5,082,079, Cl. 180-118.000.
Wayne Technology, Inc.: *See*—
Breu, Fred A., 5,082,534, Cl. 202-131.000.
Weatherford, U.S., Inc.: *See*—
Schulze-Beckinghausen, Joerg E., 5,081,888, Cl. 81-57.160.
Webasto Ag Fahrzeugtechnik: *See*—
Koch, Peter; Kahnau, Guenter; Glaser, Peter; Habbel, Georg; Kunz, Stefan; and Schmatelka, Bernhard, 5,082,175, Cl. 237-12.30C.
Webb, John L.; Kilgore, Robert D.; and Patil, Shitalprasad N., to International Cellulose, Inc. Methods for cleaning up liquids using absorbent pellets. 5,082,563, Cl. 210-631.000.
Weber, Karl-Heinz; Harreus, Albrecht; Casals-Stenzel, Jorge; Muacevic, Gojko; Troger, Wolfgang; and Walther, Gerhard, to Boehringer Ingelheim GmbH. Thieno-triazolo-1,4-diazepino-2-carboxylic acid amides. 5,082,839, Cl. 514-220.000.
Weckenbrock, Hermann J.: *See*—
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Weeks, Paul R. Apparatus for excavating and transplanting trees and the like. 5,081,941, Cl. 111-101.000.
Wei, Mu-Kang. Lock assembly of a din type connector. 5,082,455, Cl. 439-352.000.
Weilant, Roy: *See*—
Dowd, James D.; Hilborn, David M.; Weilant, Roy; and Lawassani, Abdolhossein R., 5,082,323, Cl. 296-214.000.
Weinstein, Jack, to Primary Delivery Systems, Inc. Twist tube lift child proof cap and container. 5,082,130, Cl. 215-225.000.
Weinstein, Jack, to Primary Delivery Systems, Inc. Child resistant slide box. 5,082,137, Cl. 220-346.000.
Weiss, Wilhelm, to Krones AG Hermann Kronseder Maschinenfabrik. Device for filling containers such as bottles in counterpressure filling machines. 5,082,033, Cl. 141-39.000.
Weiss, Wolfgang: *See*—
Losch, Rolf; Orth, Winfried; Weiss, Wolfgang; and Kleffner, Hans W., 5,082,944, Cl. 546-294.000.
Weissmann, Karl: *See*—
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Welch Allyn, Inc.: *See*—
Graham, Timothy W.; and Scoins, John, 5,083,059, Cl. 313-631.000.
Welch, J. Gary; and Ellingham, Robert E., to CRI International, Inc. Hydrotreating with catalyst particles using length and density grading. 5,082,552, Cl. 208-216.00R.
Wells, Donald H. Transmission line coupling device with closed impedance matching loop. 5,083,136, Cl. 343-822.000.
Wells, Gregory J.; and Bolton, Barbara A., to Varian Associates, Inc. Spectroscopic plasma torch for microwave induced plasmas. 5,083,004, Cl. 219-121.500.
Wenzel, Norbert: *See*—
Lindner, Helmut; Wenzel, Norbert; Herff, Robert; and Schmitz, Hans-Joachim, 5,082,379, Cl. 385-101.000.
Werka, Robert O., to Teledyne Industries, Inc. Method and apparatus for mitigating space debris. 5,082,211, Cl. 244-158.00R.
Wess, Othmar; Novak, Pavel; Mechnich, Klaus; and Schultheiss, Reiner, to Dornier Medizin Technick GmbH. Positioning a patient for lithotripsy. 5,081,984, Cl. 128-24.0EL.
West, Christopher L.: *See*—
Wight, David R.; Heaton, John M.; Lewis, Meirion F.; and West, Christopher L., 5,082,342, Cl. 385-8.000.
West, Michael J.; and Williamson, Jimmy D. Automatic high-speed labeling machine employing various linear and rotational speeds of the container. 5,082,520, Cl. 156-450.000.
Westberg, Torsten: *See*—
Berglund, Goran; Lyen, Gosta; and Westberg, Torsten, 5,082,243, Cl. 251-144.000.
Westerink, Peter H.: *See*—
Knauer, Scott C.; Netravali, Arun N.; Petajan, Eric D.; and Westerink, Peter H., 5,083,206, Cl. 358-141.000.
Westfall, Robert S.: *See*—
Platteter, Dale T.; Westfall, Robert S.; and Carter, Jeff C., 5,083,264, Cl. 395-575.000.
Westhoff, James A.; Kelly, James A.; and Parker, James E., to Poly-Tec Products, Inc. Method and apparatus for lining manhole assemblies and the like. 5,081,802, Cl. 52-20.000.
Westinghouse Electric Corp.: *See*—
Kemeny, George A.; and Deis, Daniel W., 5,081,901, Cl. 89-8.000.
Reichner, Philip, 5,082,751, Cl. 429-19.000.
Walker, Roy G., 5,082,523, Cl. 156-642.000.
Westvaco Corporation: *See*—
LeVine, Joseph W., 5,082,497, Cl. 106-30.000.
Wetzel, Michael, to Carl Freudenberg, Firma. Piston or rod seal. 5,082,295, Cl. 277-165.000.
Weyand, Julius: *See*—
Frye, Andreas; Kruse, Jurgen; Weyand, Julius; Bettermann, Joachim; and Bringmann, Dirk, 5,083,127, Cl. 342-1.000.
Whatley, Roger A.; and Rybicki, Mathew A., to Motorola, Inc. Output driver circuit with improved output stage biasing. 5,083,051, Cl. 307-571.000.
Whelan, Michael J. G.: *See*—
Minnis, Alan J.; and Whelan, Michael J. G., 5,082,461, Cl. 439-786.000.
Whipp, Roy H., to Fior De Venezuela. Plant and process for fluidized bed reduction of ore. 5,082,251, Cl. 266-142.000.
Whirlpool Corporation: *See*—
Cur, Nihat O.; Kruck, Richard W.; White, William S.; and Kirby, David B., 5,082,335, Cl. 312-401.000.
Thompson, Christopher M.; Campbell, Timothy J.; and Gipson, Billy P., 5,081,849, Cl. 62-262.000.
White, Danny R.: *See*—
Gesing, Adam J.; Luce, Edward S.; Raghavan, Narashima S.; and White, Danny R., 5,082,807, Cl. 501-93.000.
White, James L.; and Nie, Tao, to Edison Polymer Innovation Corp. Film blowing process. 5,082,616, Cl. 264-567.000.
White, Marvin A.: *See*—
Sawyer, Lawrence H.; White, Marvin A.; and Knight, George W., 5,082,899, Cl. 525-74.000.
White, Stanley B., to Allied Constructions Pty. Limited. Metal wall frame structure. 5,081,813, Cl. 52-656.000.
White, William S.: *See*—
Cur, Nihat O.; Kruck, Richard W.; White, William S.; and Kirby, David B., 5,082,335, Cl. 312-401.000.
Whiteman, Marshall: *See*—
Healey, John N. C.; and Whiteman, Marshall, 5,082,651, Cl. 424-45.000.
Whitford, Robert P.; and Cofer, John I., IV, to General Electric Company. Integrated turbine generator. 5,083,040, Cl. 290-52.000.
Wickes Manufacturing Company: *See*—
Huebner, Mark fA., 5,081,792, Cl. 49-221.000.
Wicklow, Donald T.: *See*—
Dowd, Patrick F.; Bartelt, Robert J.; and Wicklow, Donald T., 5,081,788, Cl. 43-107.000.
Wickmann-Werke GmbH: *See*—
Poerschke, Karl D., 5,082,458, Cl. 439-621.000.
Widmer, Ulrich, to Hoffmann-La Roche Inc. Tricyclic pyridone derivatives. 5,082,842, Cl. 514-248.000.
Wiech, Norbert L.: *See*—
Palfreyman, Michael G.; Wiech, Norbert L.; Cheng, Hsien C.; and Kane, John M., 5,082,837, Cl. 514-183.000.
Wiese, Delmar R., to Custom Metalcraft Inc. Tablet or capsule drop tube assembly. 5,082,236, Cl. 251-5.000.
Wiesse, Joachim: *See*—
Martin, Eckhard; and Wiesse, Joachim, 5,081,950, Cl. 118-70.000.
Wight, David R.; Heaton, John M.; Lewis, Meirion F.; and West, Christopher L., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in her Britannic Majesty's Government of the. Electro-optic waveguide device. 5,082,342, Cl. 385-8.000.
Wijma, Willem S., to U.S. Philips Corp. Shaving apparatus. 5,081,767, Cl. 30-43.920.
Wijmans, Johannes G.: *See*—
Athayde, Amulya L.; Wijmans, Johannes G.; and Baker, Richard W., 5,082,471, Cl. 55-16.000.
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Wiley, Steven J.: *See*—
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Wilkie, Brian F., to Motorola, Inc. Dynamically alterable interrupt priority circuit. 5,083,261, Cl. 395-725.000.

Willey, Alan P.; and Radford, Neal T., to Command International, Inc. Apparatus for gas generation. 5,082,544, Cl. 204-270.000.

Williams, Laurence O., to Martin Marietta Corporation. Gun propellant containing ammonium azide and an inert casing. 5,081,930, Cl. 102-292.000.

Williams, Ralph E.: *See*—
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Williams, Rodney D.: *See*—
Garcia, Felix; and Williams, Rodney D., 5,082,350, Cl. 359-478.000.

Williams, Roy S.: *See*—
Person, Dennis W.; Timte, Frank W.; Daubenmier, John A.; Zielke, John I.; Smith, Rodney B.; and Williams, Roy S., 5,081,886, Cl. 74-866.000.

Williamson, Jimmy D.: *See*—
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Wilson, Edwin P., to Minatronics Corporation. Cable lock. 5,082,232, Cl. 248-551.000.

Wilson, Henry E.: *See*—
LeBegue, Maurice K.; and Wilson, Henry E., 5,082,331, Cl. 299-64.000.

Wilson, John C.: *See*—
Alexandrovich, Peter S.; Derimiggio, John E.; and Wilson, John C., 5,082,883, Cl. 524-109.000.

Wilson, Malcolm E.: *See*—
Trevett, Neil F.; and Wilson, Malcolm E., 5,083,119, Cl. 340-723.000.

Wine, David E. Air thrust propulsion boat-drive train. 5,082,465, Cl. 440-37.000.

Winter, John M.; Scheel, Jerry L.; and Sortland, Matthew D., to Square D Company. Energy management accessory for circuit breaker. 5,083,103, Cl. 335-14.000.

Winters, Carl J., Jr.: *See*—
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Wirth, Allan: *See*—
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Wirth, Hans-Joachim: *See*—
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Wirz, Armin, to Maschinenfabrik Rieter AG. Method of, and apparatus for, changing bobbins in automatic winders. 5,082,191, Cl. 242-1800.00A.

Witten, Donald W. Potted insert for honeycomb panels. 5,082,405, Cl. 411-82.000.

Witthoft, Carl G.; Wirth, Allan; and Schmutz, Lawrence, to United Technologies Corporation. Optical centroid processor wavefront sensor. 5,083,015, Cl. 250-201.900.

Wolf, Erhard; Gebert, Ulrich; Furrer, Harald; Tanaka, Toshizo; Sakurai, Masao; and Goto, Masayoshi, to Hoechst Japan Limited. Therapeutic xanthine derivatives for the treatment of peptic ulcer disease. 5,082,845, Cl. 514-263.000.

Wolf, Erwin: *See*—
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Wolff, Doris; and Powell, Clois E. High solids, large particle size latex compositions. 5,082,895, Cl. 524-820.000.

Wollscheidt, Allen N.; and Porter, David P., to Cummins Electronics Company, Inc. Filter electrical connector. 5,082,457, Cl. 439-620.000.

Wolverine Brass, Inc.: *See*—
Spurgeon, Gordon L.; McGhee, Charles M.; and Evans, Frank C., 5,082,017, Cl. 137-217.000.

Wong, Lam F.: *See*—
Kamath, Venkatesh H.; and Wong, Lam F., 5,083,164, Cl. 355-245.000.

Wong, Ooi; Nishiahta, Toshiaki; and Rytting, Joseph H., to Odontex, Inc. Biodegradable absorption enhancers. 5,082,866, Cl. 514-785.000.

Wong, Patrick S. L.; Barclay, Brian L.; Deters, Joseph C.; and Theeuwes, Felix, to Alza Corporation. Controlled-release system with constant pushing source. 5,082,668, Cl. 424-473.000.

Wood, Edward T.; Surgnier, David H.; and Brooks, Robert T., to CTC Corporation. Horizontal inflatable tool. 5,082,062, Cl. 166-382.000.

Wood, James L., to Ovonic Synthetic Materials Company, Inc. Neutron reflecting supermirror structure. 5,082,621, Cl. 376-458.000.

Woodward Governor Company: *See*—
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Worcester Polytechnic Institute: *See*—
Gibson, Daniel G., III; and Hilly, Joan B., 5,082,782, Cl. 435-240.200.

Worrell, Dean A.: *See*—
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Worrell, Eugene H.: *See*—
Rauh, Michael M.; and Worrell, Eugene H., 5,082,131, Cl. 220-4.210.

Wreede, John E.: *See*—
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Wright, Antony P.; and Varaprath, Padmakumari J., to Dow Corning Corporation. Novel synthesis of difunctional halo organo noncarbon group IV main group element amides. 5,082,958, Cl. 556-413.000.

Wright, Joseph M., to Loral Aerospace Corp. Coated article for hot isostatic pressing. 5,082,710, Cl. 428-76.000.

Wright, Lloyd A. Gun stand. 5,081,782, Cl. 42-94.000.

Wright Tool Company: *See*—
Ninni, David K., 5,082,125, Cl. 211-184.000.

Wu, Fu-Chi. Hair fastening device. 5,082,011, Cl. 132-281.000.

Wu, Hyon O.: *See*—
Clark, Charles A., Jr.; Kuo, Wen T.; and Wu, Hyon O., 5,083,003, Cl. 219-110.000.

Wyatt, William B.; Burnette, Herbert M.; Callahan, Joseph G.; and Mevis, Blake A. Golf iron cleaner. 5,081,735, Cl. 15-104.920.

Wyles, Richard H.; and Madajian, David, to Hughes Aircraft Company. 3-transistor source follower-per-detector unit cell for 2-dimensional focal plane arrays. 5,083,016, Cl. 250-208.100.

Wyman, Donald P., to Rochester Midland Corporation. Condensation vapor degreaser. 5,081,772, Cl. 34-79.000.

Wymore, Lee A.: *See*—
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Xerox Corporation: *See*—
Borton, Michael D.; Hubble, Fred F., III; Martin, James P.; Mattioli, Theresa K.; and Shoemaker, Ralph A., 5,083,161, Cl. 355-208.000.
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Gundlach, Robert W.; and Bergen, Richard F., 5,083,145, Cl. 346-159.000.
Hack, Michael; Thompson, Malcolm J.; and Tuan, Hsing C., 5,083,175, Cl. 357-30.000.
Hoffend, Thomas R.; Bruzee, Michelle M.; and Eddy, Clifford O., 5,082,758, Cl. 430-110.000.
Kamath, Venkatesh H.; and Wong, Lam F., 5,083,164, Cl. 355-245.000.
Keoshkerian, Barkev; and Ong, Beng S., 5,082,757, Cl. 430-106.000.
Nowak, William J.; and Hinton, John H., 5,083,138, Cl. 346-1.100.
Platteter, Dale T.; Westfall, Robert S.; and Carter, Jeff C., 5,083,264, Cl. 395-575.000.
Reilly, Paul E.; Fleysher, Daniel; Rulli, Paul A.; and Latone, Jack T., 5,083,210, Cl. 358-298.000.
Sacripante, Guerino; McAneney, T. Brian; Drappel, Stephan; Van Kao, Sheau; and Alexandru, Lupu, 5,082,919, Cl. 528-176.000.
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Yabe, Toshikazu; and Yokouchi, Atsushi, to Nippon Seiko Kabushiki Kaisha. Aqueous magnetic fluid composition and process for producing thereof. 5,082,581, Cl. 252-62.540.

Yabusaki, Kenichi K.: *See*—
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Yagi, Shigeru: *See*—
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Yaguchi, Atsunori; and Funaki, Keisuke, to Idemitsu Petrochemical Co., Ltd. Styrene-based resin composite material. 5,082,717, Cl. 428-207.000.

Yagyu, Takashi; Tanaka, Soutarou; and Katsuki, Kimio, to Hitachi Construction Machinery Co., Ltd. Hydraulic pilot operation circuit and valve for quickly discharging oil. 5,081,905, Cl. 91-461.000.

Yamada, Isamu: *See*—
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Yamada, Katsuyuki; Maeda, Teruaki; and Nakaya, Yoshichika, to Fujitsu Limited. Bipolar random access memory. 5,083,292, Cl. 365-155.000.

Yamada, Kazuhiro: *See*—
Kuroda, Takashi; Yamada, Kazuhiro; Ishibashi, Tadao; Hayashida, Suetou; Kimura, Kyoichiro; and Sameshima, Masaru, 5,082,900, Cl. 525-211.000.

Yamada, Keizo, to NEC Corporation. Semiconductor sensor. 5,081,867, Cl. 73-517.00R.

Yamada, Masao; Nakaishi, Masafumi; Nakagawa, Kenji; Furumura, Yuji; Eshita, Takashi; and Mieno, Fumitake, to 501 Fujitsu Limited. Method of fabricating an X-ray exposure mask. 5,082,695, Cl. 427-249.000.

Yamada, Takahiro; and Terakawa, Sumio, to Matsushita Electronics Corporation; and Matsushita Electric Industrial Co., Ltd. Charge coupled device for a solid state image pick-up device. 5,083,173, Cl. 357-24.000.

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Yamagata, Hideo; Kitamoto, Noriyuki; Kato, Takeo; Tsukagoshi, Norihiro; and Udaka, Shigezo, to Shigezo Udaka. β-amylase gene. 5,082,781, Cl. 435-201.000.

Yamagata, Tadato, to Mitsubishi Denki Kabushiki Kaisha. Integrated circuit having superconductive wirings. 5,083,188, Cl. 357-71.000.

Yamaguchi, Hideki; Nitta, Masahiro; and Furukawa, Katsunori, to Matsushita Electric Industrial Co., Ltd. Microwave oven having device for preventing concentration of microwaves on heater element. 5,082,999, Cl. 219-10.55B.

Yamaguchi, Hisayoshi, to Shin-Etsu Handotai Company, Ltd. Method for fire-extinguishment on hardly extinguishable burning materials. 5,082,575, Cl. 252-2.000.

Yamaguchi, Tetsuo: *See*—
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Yamaha Corporation: *See*—
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Yamaha Hatsudoki Kabushiki Kaisha: *See*—
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Yamakawa, Tomio: *See*—
Okabe, Susumu; Masaki, Mitsuo; Yamakawa, Tomio; Matsukura, Hitoshi; and Nomura, Yutaka, 5,082,943, Cl. 546-210.000.

Yamakita, Yoshimichi; and Umino, Mitsugu, to Yoshida Kogyo K.K. Method of continuous changing dye-color in spray dyeing. 5,081,731, Cl. 8-151.000.

Yamamoto, Akira, to Shin Fuji Burner Co., Ltd. Handy compact torch. 5,082,440, Cl. 431-143.000.

Yamamoto, Akira: *See*—
Fukumoto, Takehiko; and Yamamoto, Akira, 5,082,961, Cl. 556-466.000.

Yamamoto, Hiroaki: *See*—
Yamashita, Yoshinori; and Yamamoto, Hiroaki, 5,082,096, Cl. 192-0.032.

Yamamoto, Hiroshi: *See*—
Suzuki, Akihiro; Yamamoto, Hiroshi; and Tobita, Hiroshi, 5,082,257, Cl. 271-293.000.

Yamamoto, Isamu: *See*—
Matsuo, Hideshige; Yamamoto, Isamu; Itoh, Michio; Sato, Kuniaki; Nakamura, Yoshihiro; Tomita, Akia; and Mihara, Yoshiki, 5,082,166, Cl. 228-189.000.

Yamamoto, Kazuhiko: *See*—
Asanuma, Tadashi; Yamamoto, Kazuhiko; Ito, Mitsuru; and Kawanishi, Kaoru, 5,082,893, Cl. 524-547.000.

Yamamoto, Keisaku: *See*—
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Yamamoto, Kikuo: *See*—
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Yamamoto, Kiyokazu: *See*—
Sasaki, Michiaki; Yamamoto, Kiyokazu; and Matsuki, Toshiyuki, 5,082,426, Cl. 417-198.000.

Yamamoto, Kyoichi; and Hasebe, Takao, to Kabushiki Kaisha Okuma Tekkosho. Method for correcting tool feed rate in numerical control system and apparatus therefor. 5,083,280, Cl. 364-474.300.

Yamamoto, Mayumi: *See*—
Yamamoto, Takao; Eida, Tsuyoshi; and Yamamoto, Mayumi, 5,082,496, Cl. 106-22.000.

Yamamoto, Takao; Eida, Tsuyoshi; and Yamamoto, Mayumi, to Canon Kabushiki Kaisha. Ink, and ink-jet recording method and apparatus employing the ink. 5,082,496, Cl. 106-22.000.

Yamanaka, Motosuke: *See*—
Oinuma, Hitoshi; Yamanaka, Motosuke; Miyake, Kazutoshi; Hoshiko, Tomonori; Minami, Norio; Shoji, Tadao; Daiku, Yoshiharu; Sawada, Kohei; and Nomoto, Kenichi, 5,082,850, Cl. 514-317.000.

Yamanishi, Toru: *See*—
Akasaka, Nobuhiro; Zakoh, Toshiaki; Yamanishi, Toru; Katsurashima, Wataru; and Ogasawara, Ichiro, 5,082,347, Cl. 385-114.000.

Yamasaki, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Priority control system. 5,083,258, Cl. 395-725.000.

Yamashita, Takashi: *See*—
Saitou, Toshihiko; Yamashita, Takashi; Ishii, Kenichi; Ogawa, Masanobu; Shibata, Shinya; Oda, Kenji; and Kume, Masaharu, 5,083,134, Cl. 343-713.000.

Yamashita, Yoshinori; and Yamamoto, Hiroaki, to Mitsubishi Denki K.K.; and Suzuki Motor Corporation. Control apparatus for an automatic clutch device. 5,082,096, Cl. 192-0.032.

Yamatake-Honeywell Co., Ltd.: *See*—
Ochiai, Koichi; Aoshima, Shigeru; and Kamiunten, Shoji, 5,081,866, Cl. 73-204.210.

Yamaue, Satoshi: *See*—
Tasaka, Shigeaki; Nakano, Nobuhiko; Maeda, Kazuya; Ishida, Toshihisa; Takahashi, Yoshiaki; Nakamura, Tadashi; Yamaue, Satoshi; and Nakamura, Kumiko, 5,082,761, Cl. 430-137.000.

Yamazaki, Masayuki: *See*—
Matsui, Naoki; Iwato, Shuichi; Kaneto, Shuji; Kubo, Takami; Yamazaki, Masayuki; and Moriyama, Shigeru, 5,081,857, Cl. 72-6.000.

Yamazaki, Nobuo: *See*—
Kawasaki, Schuichi; Yamazaki, Nobuo; and Sato, Takeshi, 5,081,996, Cl. 128-661.090.

Yanagida, Tsuneo; Azuma, Motoo; and Kikkawa, Kenji, to Olympus Optical Co., Ltd. Sector mark detecting apparatus in optical disc apparatus. 5,083,303, Cl. 369-48.000.

Yanai, Akio; and Nishikawa, Yasuo, to Fuji Photo Film Co., Ltd. Magnetic recording media. 5,082,714, Cl. 428-141.000.

Yarger, Ronald G.; Klemann, Lawrence P.; and Finley, John W., to Nabisco Brands, Inc. Amide/amine ester derivatives as low calorie fat mimetics. 5,082,683, Cl. 426-601.000.

Yarmoska, Bruce S.: *See*—
Gurevitch, Judithann; Yarmoska, Bruce S.; and Gunter, Harvey R., 5,082,902, Cl. 525-240.000.

Yarnall, Michele: *See*—
Boyle, Michael D. P.; and Yarnall, Michele, 5,082,931, Cl. 530-413.000.

Yasuda, Kikuo; Shibata, Kenyu; Minami, Nobuyoshi; Seki, Toshimi; Shiraiwa, Masafumi; Nakao, Tomio; Miyasaka, Katsuhiko; Ishimori, Tsutomu; Gotanda, Kotaro; and Sasaki, Takako, to Teikoku Hormone Mfg. Co., Ltd. Pyridazinone derivatives. 5,082,844, Cl. 514-253.000.

Yasuda, Yuzou, to Sanyo Electric Co., Ltd. Chrominance signal processing circuit and video tape recorder having function of processing chrominance signal. 5,083,213, Cl. 358-326.000.

Yasui, Nobuo: *See*—
Nonami, Tohru; and Yasui, Nobuo, 5,082,808, Cl. 501-95.000.

Yazaki Corporation: *See*—
Saimoto, Tetsuro, 5,082,463, Cl. 439-883.000.

Yazaki, Yoshito: *See*—
Koizumi, Junji; and Yazaki, Yoshito, 5,082,889, Cl. 524-451.000.

Ye-Ming, Tsao. Extensible sound case. 5,082,084, Cl. 181-153.000.

Yeh, Charles S.: *See*—
Jones, Lloyd G.; Yeh, Charles S.; and Chow, Christopher V., 5,082,052, Cl. 166-51.000.

Yeh, Wu-Kuang: *See*—
Dotzlaf, Joe E.; and Yeh, Wu-Kuang, 5,082,772, Cl. 435-49.000.

Yelderman, Mark; Goldberger, Daniel S.; and Braig, James R., to Critikon, Inc. Optically stabilized infrared energy detector. 5,081,998, Cl. 128-719.000.

Yelverton, Forrest D.: *See*—
Duehring, William K.; and Yelverton, Forrest D., 5,082,303, Cl. 280-288.000.

Yim, Young-Ho; and Do, Jae-Young, to SamSung Electronics Co., Ltd. High voltage follower and sensing circuit. 5,083,045, Cl. 307-350.000.

Yissum Research and Development Corporation of the Hebrew University of Jerusalem: *See*—
Appelbaum, Jerachmiel Y.; Chevion, Mordechai; and Uretzky, Gideon, 5,082,851, Cl. 514-332.000.

Yokelson, Howard B.: *See*—
Ernst, Andreas B.; Yokelson, Howard B.; and Gipe, Robert K., 5,082,959, Cl. 556-438.000.

Yokoi, Kazuma, to Nippon Miktron Limited. Acrylic elastomer and its vulcanizable composition. 5,082,903, Cl. 525-340.000.

Yokote, Masatsugu: *See*—
Kawagoe, Kenji; Ito, Hideo; and Yokote, Masatsugu, 5,083,275, Cl. 364-424.050.

Yokouchi, Atsushi: *See*—
Yabe, Toshikazu; and Yokouchi, Atsushi, 5,082,581, Cl. 252-62.540.

Yokoyama, Masahide: *See*—
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Yokoyama, Noriyasu: *See*—
Morita, Yoshitsugu; Yokoyama, Noriyasu; and Yoshida, Keiji, 5,082,891, Cl. 524-481.000.

Yoneda, Ryozo; Ohara, Hiroyuki; and Ohtsuka, Shinji, to Nippon Zoki Pharmaceutical Co., Ltd. Animal experiment apparatus. 5,081,955, Cl. 119-15.000.

Yoneya, Masayuki: *See*—
Horie, Misato; Fukumoto, Masahiro; and Yoneya, Masayuki, 5,082,603, Cl. 252-628.000.

Yonezawa, Keitaro, to Kabushiki Kaisha KOSMEK. Three way valve assembly with pressure compensating valve. 5,082,021, Cl. 137-596.200.

Yoshida Industry Co., Ltd.: *See*—
Kuramitsu, Mikihiro; Kabasawa, Junichi; and Watanabe, Nobuhisa, 5,082,435, Cl. 425-117.000.

Yoshida, Keiji: *See*—
Morita, Yoshitsugu; Yokoyama, Noriyasu; and Yoshida, Keiji, 5,082,891, Cl. 524-481.000.

Yoshida Kogyo K.K.: *See*—
Takizawa, Toshiaki; and Tominaga, Yutaka, 5,081,747, Cl. 24-415.000.
Terada, Yasuharu; and Horita, Yoshiyuki, 5,081,855, Cl. 70-68.000.
Yamakita, Yoshimichi; and Umino, Mitsugu, 5,081,731, Cl. 8-151.000.

Yoshida, Makoto, to Sharp Kabushiki Kaisha. Voltage control circuit for a semiconductor apparatus capable of controlling an output voltage. 5,083,043, Cl. 307-296.800.

Yoshida, Makoto: *See*—
Izaki, Teruaki; Yoshida, Makoto; Osawa, Masami; Higuchi, Seijun; and Hisaaki, Sato, 5,082,536, Cl. 205-109.000.

Yoshida, Nobuo; and Koide, Kazuo, to Hitachi, Ltd. Semiconductor integrated circuit device and wiring method thereof. 5,083,181, Cl. 357-45.000.

Yoshigai, Kenichi, to Yoshigai Kikai Kinzoku Co. Ltd. Cycle brake. 5,082,092, Cl. 188-24.210.

Yoshigai Kikai Kinzoku Co. Ltd.: *See*—
Yoshigai, Kenichi, 5,082,092, Cl. 188-24.210.

Yoshihara, Hirofumi: *See*—
Hayashi, Yutaka; Sato, Masaaki; Muramatsu, Yuji; Yoshihara, Hirofumi; and Hasegawa, Teiji, 5,083,185, Cl. 357-38.000.

Yoshihara, Toru: *See—*
Tamura, Tadashi; Kiyomine, Akira; Tanaka, Michio; Nishizawa, Yoshinori; Tagami, Hidetoshi; Ogawa, Masahiko; Yoshihara, Toru; Muraoka, Tsutomu; and Kawase, Jiro, 5,082,467, Cl. 8-409.000.

Yoshii, Youji: *See—*
Komatsu, Yoshihiro; Yoshii, Youji; and Murakami, Daisuke, 5,083,126, Cl. 341-156.000.

Yoshinaga, Yoko: *See—*
Tabata, Masayoshi; Kushibiki, Nobuo; and Yoshinaga, Yoko, 5,082,358, Cl. 359-642.000.

Yoshioka, Fumitaka: *See—*
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Yoshioka, Hitoshi, to Yutaka Electric Mfg. Co., Ltd. Switching power supply for microwave oven. 5,082,998, Cl. 219-10.55B.

Yoshioka, Mamoru: *See—*
Sugiyama, Toshihisa; Yoshioka, Mamoru; Nakata, Kunihiko; Miyake, Takashi; and Kidokoro, Toru, 5,081,842, Cl. 60-612.000.

Yoshitake, Makoto: *See—*
Mikami, Ryuzo; Yoshitake, Makoto; and Okawa, Tadashi, 5,082,916, Cl. 528-26.000.

Young, Thomas F.: *See—*
Tonkiss, David W.; and Young, Thomas F., 5,082,454, Cl. 439-320.000.

Yount, Thomas L.; Mayfield, George G.; and Agreda, Victor H., to Eastman Kodak Company. Oxyiodination process for manufacture of 2,6-diiodonaphthalene. 5,082,982, Cl. 570-203.000.

Yu, Poli C.: *See—*
Anderson, Karl P.; Clark, Whaite M.; Yu, Poli C.; and Moyle, Richard T., 5,082,698, Cl. 427-386.000.

Yu, Yuan-Chieh. Adjustable crib with vibrator, moisture sensor, fan, microphone and speaker. 5,081,722, Cl. 5-99.100.

Yukl, Tex, to Spatial Dynamics, Ltd. Fluid mixture ratio monitoring method and apparatus. 5,083,089, Cl. 324-632.000.

Yutaka Electric Mfg. Co., Ltd.: *See—*
Yoshioka, Hitoshi, 5,082,998, Cl. 219-10.55B.

Zachrei, Jurgen: *See—*
Munch, Udo; and Zachrei, Jurgen, 5,082,336, Cl. 312-292.000.

Zahn, Rudolf K.: *See—*
Muller, Werner E. G.; Zahn, Rudolf K.; and Eich, Eckart, 5,082,865, Cl. 514-729.000.

Zaim, Adil Z., to Omega Environmental, Inc. Leak protected vessel. 5,081,864, Cl. 073-049.200.

Zaitoun, Alain: *See—*
Kohler, Norbert; and Zaitoun, Alain, 5,082,577, Cl. 252-8.551.

Zaki, Kawthar A., to University of Maryland. Dual mode dielectric resonator filters without iris. 5,083,102, Cl. 333-212.000.

Zakoh, Toshiaki: *See—*
Akasaka, Nobuhiro; Zakoh, Toshiaki; Yamanishi, Toru; Katsurashima, Wataru; and Ogasawara, Ichiro, 5,082,347, Cl. 385-114.000.

Zavadsky, Emil: *See—*
Bansleben, Donald A.; Daly, Joseph M.; and Zavadsky, Emil, 5,082,878, Cl. 523-203.000.

Zawodzinski, Thomas A.: *See—*
Rishpon, Judith; Zawodzinski, Thomas A.; and Gottesfeld, Shimshon, 5,082,550, Cl. 204-403.000.

Zenali, Ahmad: *See—*
Ames, Donald B.; and Zenali, Ahmad, 5,081,720, Cl. 4-324.000.

Zerver, Hermann-Jochen, to Hazet-Werk Hermann Zerver GmbH & Co. KG. Method for the manufacture of die-forged or die-stamped workpieces. 5,083,008, Cl. 219-121.690.

Zetachron, Inc.: *See—*
Snipes, Wallace C.; and Agarwala, Neena, 5,082,655, Cl. 424-386.000.

Zexel Corporation: *See—*
Okano, Masami; Takeuchi, Kunihiro; and Ishizuka, Hideki, 5,083,276, Cl. 364-424.050.

Zielke, John I.: *See—*
Person, Dennis W.; Timte, Frank W.; Daubenmier, John A.; Zielke, John I.; Smith, Rodney B.; and Williams, Roy S., 5,081,886, Cl. 74-866.000.

Zierick Manufacturing Corporation: *See—*
Legrady, Janos, 5,082,460, Cl. 439-741.000.

Zimmermann, John, to Paperboard Industries Corporation. Carton having a pour spout. 5,082,117, Cl. 229-218.000.

Zimpro Passavant Environmental Systems Inc.: *See—*
Beula, David A.; Momont, Joseph A.; and Copa, William M., 5,082,571, Cl. 210-739.000.

Zlatkevich, Lev Y.: *See—*
Raevsky, Vitaly; Zlatkevich, Lev Y.; and Brown, Robert D., 5,082,877, Cl. 523-179.000.

Zorrilla, Marta: *See—*
Chantraine, Philippe; and Zorrilla, Marta, 5,082,718, Cl. 428-209.000.

Zwadlo, Gregory L.: *See—*
Brown, David E.; and Zwadlo, Gregory L., 5,083,163, Cl. 355-219.000.

3C Chemical Labaratories Pty Ltd.: *See—*
Cross, Kenneth M., 5,082,149, Cl. 222-162.000.

501 Fujitsu Limited: *See—*
Yamada, Masao; Nakaishi, Masafumi; Nakagawa, Kenji; Furumura, Yuji; Eshita, Takashi; and Mieno, Fumitake, 5,082,695, Cl. 427-249.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF JANUARY, 1992

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bratchley, Robin: *See—*
Whitehead, Colin J.; Bratchley, Robin; and Haslop, John M., Re. 33,802, Cl. 283-74.000.

Dentsply Research & Development Corp.: *See—*
Green, Russell D., Re. 33,801, Cl. 222-82.000.

Fornwalt, Donald E.; Lomasney, Gary M.; and Routsis, Kostas, to United Technologies Corporation. Method for electroplating nickel onto titanium alloys. Re. 33,800, Cl. 205-212.000.

Gold, Jeffrey W.; and Nickens, Dan A. Cylinder rupture vessel. Re. 33,799, Cl. 141-51.000.

Green, Russell D., to Dentsply Research & Development Corp. Mixing and discharge capsule. Re. 33,801, Cl. 222-82.000.

Haslop, John M.: *See—*
Whitehead, Colin J.; Bratchley, Robin; and Haslop, John M., Re. 33,802, Cl. 283-74.000.

Lomasney, Gary M.: *See—*
Fornwalt, Donald E.; Lomasney, Gary M.; and Routsis, Kostas, Re. 33,800, Cl. 205-212.000.

Nickens, Dan A.: *See—*
Gold, Jeffrey W.; and Nickens, Dan A., Re. 33,799, Cl. 141-51.000.

PRC Corporation: *See—*
Weiss, Hardy P., Re. 33,803, Cl. 372-58.000.

REO Hydraulic Pierce & Form Inc.: *See—*
Waltonen, Edward J., Re. 33,798, Cl. 83-529.000.

Routsis, Kostas: *See—*
Fornwalt, Donald E.; Lomasney, Gary M.; and Routsis, Kostas, Re. 33,800, Cl. 205-212.000.

Thomas De La Rue & Co.: *See—*
Whitehead, Colin J.; Bratchley, Robin; and Haslop, John M., Re. 33,802, Cl. 283-74.000.

United Technologies Corporation: *See—*
Fornwalt, Donald E.; Lomasney, Gary M.; and Routsis, Kostas, Re. 33,800, Cl. 205-212.000.

Waltonen, Edward J., to REO Hydraulic Pierce & Form Inc. Self-equalizing piercing machine. Re. 33,798, Cl. 83-529.000.

Weiss, Hardy P., to PRC Corporation. Gas laser with at least one excitation tube wherethrough gas is actually flowing. Re. 33,803, Cl. 372-58.000.

Whitehead, Colin J.; Bratchley, Robin; and Haslop, John M., to Thomas De La Rue & Co. Numbered documents. Re. 33,802, Cl. 283-74.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Arachnid, Ind.: *See—*
Beall, Paul F.; and Harlan, Eugene G., B1 4,824,121, Cl. 273-376.000.

Balent, Russell P.: *See—*
Hunt, James R.; and Balent, Russell P., B1 4,571,850, Cl. 34-242.000.

Beall, Paul F.; and Harlan, Eugene G., to Arachnid, Ind. Dart game with programmable displays. B1 4,824,121, 1-21-92, Cl. 273-376.000.

Harlan, Eugene G.: *See—*
Beall, Paul F.; and Harlan, Eugene G., B1 4,824,121, Cl. 273-376.000.

Hoult, David I., to National Research Development Corp. Spectrographic analysis of materials. B1 3,999,118, 1-21-92, Cl. 324-314.000.

Hunt, James R.; and Balent, Russell P., to Verteq, Inc. Centrifugal wafer processor. B1 4,571,850, 1-21-92, Cl. 34-242.000.

Macrovision Corp.: *See—*
Okada, Masataka; and Shiun, Toshimi, B1 4,336,554, Cl. 380-20.000.

National Research Development Corp.: *See—*
Hoult, David I., B1 3,999,118, Cl. 324-314.000.

Okada, Masataka; and Shiun, Toshimi, to Macrovision Corp. Code signal blanking apparatus. B1 4,336,554, 1-21-92, Cl. 380-20.000.

Shiun, Toshimi: *See—*
Okada, Masataka; and Shiun, Toshimi, B1 4,336,554, Cl. 380-20.000.

Verteq, Inc.: *See—*
Hunt, James R.; and Balent, Russell P., B1 4,571,850, Cl. 34-242.000.

LIST OF DESIGN PATENTEES

A.M.K. Investments Ltd.: *See—*
Kraus, Arthur M., 323,243, Cl. D3-65.000.

ACE Surgical Supply Co.: *See—*
Carchidi, Joseph E., 323,270, Cl. D8-21.000.

Adac Laboratories: *See—*
Perusek, Allan J., 323,386, Cl. D24-159.000.

Adachi, Yoshiaki: *See—*
Sasaki, Yuichiro; and Adachi, Yoshiaki, 323,274, Cl. D8-61.000.
Sasaki, Yuichiro; and Adachi, Yoshiaki, 323,275, Cl. D8-61.000.

Akabane, Jun: *See—*
Moro, Ken; Akabane, Jun; and Kobayashi, Hiroshi, 323,337, Cl. D16-209.000.

Akzo N.V.: *See—*
Becker, John W., 323,388, Cl. D24-103.000.

Alan George (U.K.) Limited: *See—*
Zoltie, Alan, 323,237, Cl. D2-185.000.

Allsteel Inc.: *See—*
Zapf, Otto, 323,251, Cl. D6-422.000.

American Bictech Inc.: *See—*
Best, Barney L.; and Young, Randolph H. L., 323,246, Cl. D4-122.000.

American Standard Inc.: *See—*
Stairs, Henry M., Jr., 323,379, Cl. D23-281.000.
Stairs, Henry M., Jr., 323,380, Cl. D23-281.000.

Anske, Leander H. Foldable tea cart. 323,252, 1-21-92, Cl. D6-429.000.

Aoki, Osamu; Okada, Kiyonori; Sunago, Seizo; Futagawa, Hitoshi; Ikeda, Kohji; and Hasegawa, Shuji, to Fujisawa Pharmaceutical Co., Ltd. Medical fluid container. 323,389, 1-21-92, Cl. D24-118.000.

arlac-Werk Heiko Ippen GmbH & Co.: *See—*
Halm, Hans, 323,352, Cl. D19-75.000.

Arnette, Gregory F.: *See—*
Jannard, James H.; and Arnette, Gregory F., 323,333, Cl. D16-112.000.

Barenthsen, Roger S. Adjustable trowel. 323,271, 1-21-92, Cl. D8-45.000.

Becker, John W., to Akzo N.V. Tablet. 323,388, 1-21-92, Cl. D24-103.000.

Beecham Group p.l.c.: *See—*
Jones, Joe, 323,292, Cl. D9-377.000.

Bellini, Mario. Ink ribbon cartridge. 323,341, 1-21-92, Cl. D18-12.000.

Bellini, Mario. Ink ribbon cartridge. 323,342, 1-21-92, Cl. D18-12.000.

Best, Barney L.; and Young, Randolph H. L., to American Bictech Inc. Frame for a paint roller. 323,246, 1-21-92, Cl. D4-122.000.

Bidwell, Christopher C., to Paul Flum Ideas, Inc. Combined personal cooler and seat. 323,267, 1-21-92, Cl. D7-606.000.
Blackburn, Melvin. Combined table and bowl. 323,263, 1-21-92, Cl. D6-486.000.
Bookwalter, John R.: *See—*
Paine, Donald A.; Paine, Virginia G.; and Bookwalter, John R., 323,390, Cl. D24-129.000.
Bruke, Richard L., to Spirac Engineering AB. Section of a shaftless spiral conveyor. 323,414, 1-21-92, Cl. D34-29.000.
Brummer, Timothy E. Recumbent bicycle. 323,306, 1-21-92, Cl. D12-111.000.
Brunetti, Michael J., to Engineered Inserts & Systems Inc. Insert for plastic molded parts. 323,287, 1-21-92, Cl. D8-385.000.
Brunetti, Michael J., to Engineered Inserts & Systems Inc. Insert for plastic molded parts. 323,288, 1-21-92, Cl. D8-385.000.
Bruno, Robert H.: *See—*
Bulow, George M.; Staubitz, Robert B.; and Bruno, Robert H., 323,351, Cl. D19-62.000.
Bryant, Charles D., to Moss, Inc. Tent. 323,370, 1-21-92, Cl. D21-253.000.
Bulow, George M.; Staubitz, Robert B.; and Bruno, Robert H., to Interactive Internationl, Inc. Video training device. 323,351, 1-21-92, Cl. D19-62.000.
Butler, Kenneth W. Adjustable lantern holder. 323,408, 1-21-92, Cl. D26-138.000.
Byrne, Harold J. Safety recapper for hypodermic needles. 323,392, 1-21-92, Cl. D24-130.000.
Canon Kabushiki Kaisha: *See—*
Umino, Toshio; and Tokuda, Hiroyuki, 323,344, Cl. D18-54.000.
Carchidi, Joseph E., to ACE Surgical Supply Co. Combined ratchet screw driver and holder. 323,270, 1-21-92, Cl. D8-21.000.
Casablanca Fan Company, Inc.: *See—*
Mason, Jean C., 323,384, Cl. D23-377.000.
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Wakamatsu, Masamichi, 323,299, Cl. D10-39.000.
Casto, Jane W.; and Hostager, Curtis A., to Minnesota Mining and Manufacturing Company. Stethoscope chestpiece. 323,394, 1-21-92, Cl. D24-134.000.
Caya, Dale E. Mug. 323,266, 1-21-92, Cl. D7-517.000.
Ceramaspeed Limited: *See—*
Higgins, George A.; and McWilliams, Kevin R., 323,385, Cl. D23-419.000.
Chen, Feng-Yin. Hanger or similar article. 323,247, 1-21-92, Cl. D6-326.000.
Chen, Lee C., to Co-Union Industry Co., Ltd. Handlebar grip. 323,280, 1-21-92, Cl. D8-303.000.
Cheng, Tzu-Keng. Rotating axis marking unit for golf ball. 323,301, 1-21-92, Cl. D10-82.000.
Christian Dalloz SA: *See—*
Dalloz, Christian, 323,335, Cl. D16-112.000.
Co-Union Industry Co., Ltd.: *See—*
Chen, Lee C., 323,280, Cl. D8-303.000.
Copp, Gabrielle, to Societe des Produits Nestle S.A. Candy tablet. 323,236, 1-21-92, Cl. D1-127.000.
Cornell, Kevin S. Shoe safety guard. 323,240, 1-21-92, Cl. D2-277.000.
Cornwell, Diana E. Flag display case. 323,257, 1-21-92, Cl. D6-470.000.
Costello, Donald G. Miniature golf bag. 323,242, 1-21-92, Cl. D3-37.000.
Court, Nigel T. Collapsible projection screen. 323,338, 1-21-92, Cl. D16-241.000.
Craig, Leonard. Automotive engine heat exchanger. 323,328, 1-21-92, Cl. D15-5.000.
Cress, Benjamin P.: *See—*
Cress, John; and Cress, Benjamin P., 323,322, Cl. D14-114.000.
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Gisiger, Urs. Luggage lock. 323,283, 1-21-92, Cl. D8-331.000.
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Hoenig, David, 323,289, Cl. D9-337.000.

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Rooke, Julianne O., to Osborn Enterprises, Inc. Peri-operative boot. 323,239, 1-21-92, Cl. D2-275.000.

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Kee, Peter M. Y., 323,256, Cl. D6-465.000.

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Hobson, Jody A., 323,245, Cl. D3-74.000.

S. C. Johnson & Son, Inc.: *See—*
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Kline, Jeffrey L.; and Sabella, Edward J., 323,321, Cl. D14-109.000.

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Schwartz, Alan J.: *See—*
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Nakatani, Akihiro, 323,310, Cl. D12-146.000.
Yamashita, Fumikazu, 323,311, Cl. D12-148.000.
Sumitomo Wiring Systems, Ltd.: *See*—
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Sunago, Seizo: *See*—
Aoki, Osamu; Okada, Kiyonori; Sunago, Seizo; Futagawa, Hitoshi; Ikeda, Kohji; and Hasegawa, Shuji, 323,389, Cl. D24-118.000.
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Tandy, Bruce A. Traction band for vehicle tire. 323,312, 1-21-92, Cl. D12-154.000.
Taniguchi, Mitsuru: *See*—
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Tel Sagami Limited: *See*—
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Zwick, Michael L., 323,278, Cl. D8-98.000.
Thinking Machines Corporation: *See*—
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Evans, David, 323,259, Cl. D6-474.000.
Tytan Support Wear: *See*—
Simmons, Gregory C., 323,398, Cl. D24-190.000.
Uchida, Shinichi: *See*—
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Whitehead, Verlon E.: *See*—
Feinstein, Paul, Jr.; Hunt, Ronald E.; Schwartz, Alan J.; and Whitehead, Verlon E., 323,318, Cl. D13-182.000.
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Yazaki Corporation: *See*—
Nagasaka, Yasuhiro; and Hatagishi, Yuji, 323,317, Cl. D13-147.000.
Yoshitani, Takuo; Kamiya, Eiichi; Sawada, Hitoshi; Kikuta, Toshiaki; and Nakahara, Yoshihito, to Mitsubishi Denki Kabushiki Kaisha. Video imaging printer or the like. 323,346, 1-21-92, Cl. D18-36.000.
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Zmuda, Mark A.: *See*—
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Saville, F. Harmon, 7,770, Cl. 8.000.
Saville, F. Harmon, 7,771, Cl. 9.000.
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Saville, F. Harmon, to Nor'East Miniature Roses, Inc. Miniature rose plant named Savahalo. 7,770, 1-21-92, Cl. 8.000.
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Yamamoto, George Y.; and Yamamoto, Terry Y., 7,774, Cl. 50.000.
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CLASSIFICATION OF PATENTS

ISSUED JANUARY 21, 1992

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2	5,081,714
20	5,081,715
78 B	5,081,716
199	5,081,717
227	5,081,718
311	5,081,719

CLASS 4

324	5,081,720

CLASS 5

90	5,081,721
99.1	5,081,722
100	5,081,723
136	5,081,724
419	5,081,727
424	5,081,725
451	5,081,726
465	5,081,728
487	5,081,729
508	5,081,730

CLASS 8

142	5,082,466
151	5,081,731
409	5,082,467
477	5,082,468

CLASS 10

52	5,081,732

CLASS 15

77	5,081,733
93.1	5,081,734
104.92	5,081,735
250.35	5,081,736
316.1	5,081,737
339	5,081,738
341	5,081,739

CLASS 16

42 R	5,081,740
238	5,081,741
337	5,081,742
341	5,081,743

CLASS 19

159 A	5,081,744
159 R	5,081,745

CLASS 24

17 B	5,081,746
415	5,081,747
442	5,081,748
577	5,081,749

CLASS 26

89	5,081,750
91	5,081,751

CLASS 28

140	5,081,752
219	5,081,753

CLASS 29

25.41	5,081,757
	5,081,758
116.1	5,081,759
130	5,081,760
419.1	5,081,754
428	5,081,761
568	5,081,762
	5,081,763
593	5,081,756
843	5,081,764
889.1	5,081,765
890.13	5,081,766
894.33	5,081,755

CLASS 30

43.92	5,081,767
101	5,081,768
261	5,081,769
355	5,081,770

CLASS 33

667	5,081,771

CLASS 34

79	5,081,772
205	5,081,773
242	B1 4,571,850

CLASS 37

197	5,081,775

CLASS 40

124.1	5,081,776
152	5,081,777

CLASS 42

50	5,081,778
69.01	5,081,780
70.11	5,081,779
90	5,081,781
94	5,081,782
	5,081,783

CLASS 43

17.2	5,081,784
44.83	5,081,785
44.89	5,081,786
55	5,081,787
107	5,081,788
134	5,081,789

CLASS 44

280	5,082,469
304	5,082,470

CLASS 47

66	5,081,791
81	5,081,790

CLASS 49

221	5,081,792
501	5,081,793

CLASS 51

60	5,081,794
131.1	5,081,795
165.74	5,081,796
206.5	5,081,797
273	5,081,798
410	5,081,799
411	5,081,800
435	5,081,801

CLASS 52

20	5,081,802
33	5,081,803
40	5,081,804
79.2	5,081,805
167 R	5,081,806
204	5,081,807
220	5,081,808
221	5,081,809
	5,081,810
227	5,081,811
484	5,081,812
656	5,081,813
670	5,081,814
747	5,081,815

CLASS 53

54	5,081,816
134.1	5,081,817
446	5,081,818
453	5,081,819
456	5,081,820
466	5,081,821
468	5,081,822
501	5,081,823
556	5,081,824
569	5,081,825

CLASS 54

2	5,081,826

CLASS 55

16	5,082,471
	5,082,472
25	5,082,473
26	5,082,474
68	5,082,475
97	5,082,476
443	5,082,477
466	5,082,478
523	5,082,479
	5,082,480

CLASS 56

27.5	5,081,827
28	5,081,828
256	5,081,829

CLASS 60

39.02	5,081,830
39.06	5,081,831
39.161	5,081,832
39.32	5,081,833
39.511	5,081,834
56	5,081,841
230	5,081,835
280	5,081,836
421	5,081,837
444	5,081,838
468	5,081,839
500	5,081,840
612	5,081,842
733	5,081,843
737	5,081,844

CLASS 62

23	5,082,481
24	5,081,845
	5,082,482
115	5,081,846
222	5,081,847
260	5,081,848
262	5,081,849
405	5,081,850
475	5,081,851

CLASS 63

3	5,081,852
12	5,081,853

CLASS 65

19	5,082,483
144	5,082,484

CLASS 66

176	5,081,854

CLASS 70

68	5,081,855
247	5,081,856

CLASS 71

3	5,082,485
9	5,082,486
30	5,082,487
62	5,082,488
79	5,082,489
92	5,082,490

CLASS 72

6	5,081,857
43	5,081,858
57	5,081,859
405	5,081,860
462	5,081,861

CLASS 73

25.03	5,081,869
37	5,081,862
38	5,081,863
65	5,081,865
204.21	5,081,866
517 R	5,081,867
532	5,081,868
575	5,081,870
863.23	5,081,871
864.74	5,081,872
865.9	5,081,873

CLASS 74

7 A	5,081,874
7 R	5,081,875
89.21	5,081,876
116	5,081,877
360	5,081,878
492	5,081,879
567	5,081,880
573 F	5,081,881
574	5,081,882
594.6	5,081,883
595	5,081,884
640	5,081,885
866	5,081,886
	5,081,887

CLASS 75

255	5,082,491
712	5,082,492
743	5,082,493

CLASS 81

57.16	5,081,888

CLASS 82

122	5,081,889

CLASS 83

13	5,081,890
140	5,081,891
529	Re.33,798

CLASS 84

19	5,081,892
	5,081,893
95.2	5,081,899
318	5,081,894
433	5,081,895
600	5,081,896
604	5,081,897
622	5,081,898

CLASS 89

1.11	5,081,900
8	5,081,901

CLASS 91

47	5,081,902
361	5,081,903
420	5,081,904
461	5,081,905
491	5,081,906
497	5,081,907
499	5,081,908

CLASS 92

14	5,081,909
20	5,081,910

CLASS 99

281	5,081,915
419	5,081,916
450.2	5,081,917
450.6	5,081,918
483	5,081,919
639	5,081,920

CLASS 073

049.2	5,081,864

CLASS 100

37	5,081,921
50	5,081,922

CLASS 101

32	5,081,923
120	5,081,924
148	5,081,925
211	5,081,926
218	5,081,927
351	5,081,928

CLASS 102

273	5,081,929
292	5,081,930
489	5,081,931

CLASS 104

112	5,081,932

CLASS 105

3	5,081,933
168	5,081,934
224.1	5,081,935

CLASS 106

18.12	5,082,494
21	5,082,495
22	5,082,496
30	5,082,497
499	5,082,498
735	5,082,499
789	5,082,501
900	5,082,500

CLASS 108

43	5,081,936

CLASS 110

246	5,081,937
269	5,081,938
276	5,081,939
346	5,081,940

CLASS 111

101	5,081,941
136	5,081,942

CLASS 112

121.12	5,081,943
	5,081,944
121.26	5,081,945

CLASS 114

264	5,081,946
345	5,081,947

CLASS 116

235	5,081,948

CLASS 118

63	5,081,949
70	5,081,950
126	5,081,951
500	5,081,952
715	5,081,953

CLASS 119

3	5,081,954
15	5,081,955
19	5,081,956
61	5,081,957
155	5,081,958

CLASS 120

419 PG	5,081,987

CLASS 123

41.35	5,081,959
41.82 R	5,081,960
51 B	5,081,961
52 MV	5,081,962
59 AC	5,081,963
90.48	5,081,976
188 AA	5,081,965
190 B	5,081,966
193 P	5,081,967
	5,081,968
197.4	5,081,964
274	5,081,969
275	5,081,970
308	5,081,971
337	5,081,972
339	5,081,973
478	5,081,974
493	5,081,975
527	5,081,977
588	5,081,978

CLASS 124

23.1	5,081,979
44.5	5,081,980

CLASS 126

92 R	5,081,981
429	5,081,982

CLASS 128

20	5,081,983
24 EL	5,081,984
32	5,081,985
62 R	5,081,986
419 R	5,081,989
419.0 PG	5,081,988
642	5,081,990
653.2	5,081,991
	5,081,992
661.08	5,081,993
661.09	5,081,994
	5,081,996
662.02	5,081,997
662.03	5,081,995
719	5,081,998
750	5,081,999
751	5,082,000
774	5,082,001
781	5,082,002
782	5,082,003
844	5,082,004
850	5,082,005
861	5,082,007
885	5,082,006

CLASS 131

194	5,082,008

CLASS 132

76.4	5,082,009
201	5,082,010
281	5,082,011

CLASS 134

1	5,082,502
26	5,082,503
42	5,082,504
109	5,082,012

CLASS 136

253	5,082,505

CLASS 137

1	5,082,013
	5,082,014
119	5,082,015
142 R	5,081,774
202	5,082,016
217	5,082,017
357	5,082,018
505.38	5,082,019
533.21	5,082,020
596.2	5,082,021
624.12	5,082,022
636.3	5,082,023
860	5,082,024
863	5,082,025

CLASS 138

94	5,082,026
113	5,082,027
118	5,082,028

CLASS 139

1 E	5,082,029
35	5,082,030
91	5,082,031

CLASS 141

1	5,082,032
39	5,082,033
51	Re.33,799
88	5,082,034
98	5,082,035

CLASS 144

3 D	5,082,036
286 A	5,082,037
	5,082,038

CLASS 148

2	5,082,506
	5,082,507
12.3	5,082,508
111	5,082,509
	5,082,510
257	5,082,511
330	5,082,512

CLASS 152

241	5,082,039
379.3	5,082,040
381.3	5,082,041
535	5,082,042

CLASS 156

175	5,082,514
212	5,082,515
277	5,082,516
345	5,082,517
	5,082,518
396	5,082,519
450	5,082,520
552	5,082,521
612	5,082,522
642	5,082,523
643	5,082,524

CLASS 159

16.1	5,082,525

CLASS 160

90	5,082,043

CLASS 162

30.11	5,082,526
164.3	5,082,527
175	5,082,528
198	5,082,529
216	5,082,530
343	5,082,531
358	5,082,532
359	5,082,533

CLASS 164

4.1	5,082,044
113	5,082,045
428	5,082,046
476	5,082,047

CLASS 165

1	5,082,048
32	5,082,049
81	5,082,050
110	5,082,051

CLASS 166

51	5,082,052
115	5,082,053
248	5,082,054
272	5,082,055
295	5,082,056
	5,082,057
300	5,082,058
308	5,082,059
339	5,082,060
378	5,082,061
382	5,082,062

CLASS 172

57	5,082,063
178	5,082,064
273	5,082,065

CLASS 173

12	5,082,066
17	5,082,067
22	5,082,068

CLASS 174

87	5,082,994
113 R	5,082,995

CLASS 175

5	5,082,069
403	5,082,070

CLASS 177

25.14	5,082,071
25.15	5,082,072
212	5,082,073

CLASS 180

11	5,082,074
68.2	5,082,075
79.1	5,082,076
79.3	5,082,077
90	5,082,078
118	5,082,079
140	5,082,080
197	5,082,081
234	5,082,082

CLASS 181

150	5,082,083
153	5,082,084

CLASS 182

2	5,082,085
17	5,082,086
129	5,082,087
204	5,082,088

CLASS 184

64	5,082,089

CLASS 187

9 E	5,082,090
17	5,082,091

CLASS 188

24.21	5,082,092
24.22	5,082,093

CLASS 190

105	5,082,094

CLASS 192

0.032	5,082,096
3.3	5,082,095
32	5,082,097
89 B	5,082,098

CLASS 194

338	5,082,099
343	5,082,100
350	5,082,101

CLASS 198

333	5,082,102
419.3	5,082,104
460	5,082,103
473.1	5,082,105
499	5,082,106
680	5,082,107
781	5,082,109
836.4	5,082,108

CLASS 200

401	5,082,996
452	5,082,997

CLASS 202

131	5,082,534
170	5,082,535

CLASS 204

153.13	5,082,540
180.1	5,082,541
192.32	5,082,542
255	5,082,543
270	5,082,544
298.03	5,082,545
298.08	5,082,546
298.39	5,082,547
299 R	5,082,548
301	5,082,549
403	5,082,550

CLASS 205

109	5,082,536
139	5,082,537
140	5,082,538
162	5,082,539
212	Re.33,800

CLASS 206

232	5,082,110
363	5,082,111
	5,082,112
459	5,082,113
539	5,082,114
545	5,082,115
579	5,082,116

CLASS 208

100	5,082,551
216 R	5,082,552

CLASS 209

3	5,082,553
166	5,082,554
244	5,082,555
599	5,082,118

CLASS 210

90	5,082,556
109	5,082,557
167	5,082,558
198.2	5,082,559
206	5,082,560
232	5,082,561
401	5,082,562
631	5,082,563
638	5,082,564
650	5,082,565
656	5,082,566
673	5,082,567
679	5,082,568
	5,082,569
683	5,082,570
739	5,082,571
744	5,082,572
749	5,082,573
787	5,082,574

CLASS 211

4	5,082,119
20	5,082,120
33	5,082,121
41	5,082,122
87	5,082,123
153	5,082,124
184	5,082,125

CLASS 212

265	5,082,127
266	5,082,128

CLASS 215

221	5,082,129
225	5,082,130

CLASS 219

10.55 B	5,082,998
	5,082,999
69.12	5,083,000
69.18	5,083,001
74	5,083,002
110	5,083,003
121.5	5,083,004
121.52	5,083,005
121.64	5,083,007
121.69	5,083,008
121.71	5,083,006
219	5,083,009
413	5,083,010
496	5,083,011
553	5,083,012

CLASS 220

4.21	5,082,131
23.83	5,082,132
89.2	5,082,133
93	5,082,135
278	5,082,136
346	5,082,137
444	5,082,138
530	5,082,139
669	5,082,140
711	5,082,134

CLASS 221

211	5,082,126
278	5,082,141

CLASS 222

1	5,082,142
66	5,082,143
82	Re.33,801
99	5,082,144
105	5,082,145
135	5,082,146
137	5,082,147
162	5,082,148
	5,082,149
189	5,082,150

CLASS 223

1	5,082,151
89	5,082,152
96	5,082,153
112	5,082,154

CLASS 224

150	5,082,155
220	5,082,156
229	5,082,157
321	5,082,158

CLASS 225

34	5,082,159

CLASS 228

110	5,082,160
122	5,082,161
123	5,082,162
124	5,082,163
176	5,082,164
179	5,082,165
189	5,082,166
258	5,082,167

CLASS 229

72	5,082,168
218	5,082,117

CLASS 232

17	5,082,169
35	5,082,170
43.2	5,082,171

CLASS 235

449	5,083,013

CLASS 236

1 G	5,082,172
11	5,082,173

CLASS 237

2 A	5,082,174
12.3 C	5,082,175
78 A	5,082,176

CLASS 238

281	5,082,178

CLASS 239

77	5,082,177
80	5,082,179
88	5,082,180
265.35	5,082,181
	5,082,182
393	5,082,183
408	5,082,184
416.5	5,082,185
682	5,082,186

CLASS 241

56	5,082,188
84	5,082,187
158	5,082,189
169.1	5,082,190

CLASS 242

18 R	5,082,192
35.6 R	5,082,194
158 R	5,082,193
199	5,082,195
	5,082,196
	5,082,197
800 A	5,082,191

CLASS 244

2	5,082,198
3.12	5,082,199
3.15	5,082,200
3.16	5,082,201
3.28	5,082,203
53 B	5,082,206
76 R	5,082,207
78	5,082,208
025	5,082,205
110 B	5,082,209
126	5,082,204
145	5,082,210
158 R	5,082,211
173	5,082,212
224	5,082,213
322	5,082,202

CLASS 246

385	5,082,214

CLASS 248

62	5,082,216
75	5,082,217
96	5,082,218
99	5,082,219
104	5,082,220
168	5,082,221
170	5,082,222
183	5,082,223
220.4	5,082,215
224.3	5,082,224
231.8	5,082,225
265	5,082,226
343	5,082,227
430	5,082,228
444.1	5,082,229
476	5,082,230
545	5,082,231
551	5,082,232
553	5,082,233
669	5,082,234
918	5,082,235

CLASS 250

201.7	5,083,014
201.9	5,083,015
208.1	5,083,016
213 VT	5,083,017
227.25	5,083,018
286	5,083,019
288	5,083,020
292	5,083,021
306	5,083,022
327.2	5,083,023
	5,083,024
353	5,083,025
369	5,083,026
374	5,083,027
390.03	5,083,028
390.05	5,083,029
453.1	5,083,030
484.1	5,083,031
492.2	5,083,032
	5,083,033
494.1	5,083,034
561	5,083,035
565	5,083,036

CLASS 251

5	5,082,236
11	5,082,237
61.5	5,082,238
120	5,082,239
	5,082,240
127	5,082,241
129.01	5,082,242
144	5,082,243
149.6	5,082,244
	5,082,245
315	5,082,246
326	5,082,247

CLASS 252

2	5,082,575
8.551	5,082,577
	5,082,579
8.7	5,082,578
62.54	5,082,581
70	5,082,582
122	5,082,584
174.12	5,082,585
184	5,082,586
299.01	5,082,587
299.62	5,082,588
299.63	5,082,589
321	5,082,590
351	5,082,591
389.4	5,082,592
397	5,082,593
502	5,082,594
511	5,082,595
	5,082,596
516	5,082,597
546	5,082,599
547	5,082,600
585	5,082,601
627	5,082,602
628	5,082,603

CLASS 254

333	5,082,248

CLASS 256

64	5,082,249

CLASS 264

40.5	5,082,604
40.6	5,082,605
	5,082,606
44	5,082,607
46.1	5,082,608
46.4	5,082,609
80	5,082,610
129	5,082,611
138	5,082,612
178 R	5,082,613
256	5,082,614
510	5,082,615
567	5,082,616

CLASS 266

44	5,082,250
142	5,082,251

CLASS 267

140.1 A	5,082,252

CLASS 269

45	5,082,253
269	5,082,254

CLASS 270

45	5,082,255
55	5,082,256

CLASS 271

10	5,082,267
14	5,082,268
65	5,082,269
109	5,082,270
161	5,082,271
186	5,082,272
215	5,082,273
293	5,082,257

CLASS 272

67	5,082,258
123	5,082,259
	5,082,260

CLASS 273

1.5 R	5,082,261
26 R	5,082,262
29 R	5,082,263
33	5,082,264
54 B	5,082,265
73 D	5,082,266
138 A	5,082,274
	5,082,275
162 F	5,082,276
164	5,082,277
	5,082,278
170	5,082,279
179 C	5,082,280
183 R	5,082,281
186 A	5,082,282
	5,082,283
186 E	5,082,284
218	5,082,285
238	5,082,286
241	5,082,287
244	5,082,288
318	5,082,289
326	5,082,290
346	5,082,291
376	B1 4,824,121
421	5,082,292

CLASS 277

3	5,082,293
37	5,082,294
165	5,082,295
204	5,082,296
230	5,082,297
235 B	5,082,298

CLASS 279

1 L	5,082,299

CLASS 280

11.22	5,082,300
38	5,082,301
234	5,082,302
288	5,082,303
407.1	5,082,304
504	5,082,305
661	5,082,306
699	5,082,307
707	5,082,308
714	5,082,309
732	5,082,310
777	5,082,311

CLASS 283

67	5,082,312
74	Re.33,802

CLASS 285

15	5,082,313
174	5,082,314
256	5,082,315

CLASS 290

4 R	5,083,037
40 A	5,083,038
44	5,083,039
52	5,083,040
	5,083,041

CLASS 292

201	5,082,316
251.5	5,082,317

CLASS 294

19.1	5,082,318
119.1	5,082,319

CLASS 296

63	5,082,320
91	5,082,321
97.9	5,082,322
214	5,082,323

CLASS 297

83	5,082,324
250	5,082,325
284 R	5,082,326
313	5,082,327
344	5,082,328
442	5,082,329

CLASS 299

37	5,082,330
64	5,082,331

CLASS 303

9.73	5,082,332
96	5,082,333

CLASS 307

149	5,083,042
296.8	5,083,043
311	5,083,044
350	5,083,045
448	5,083,046
465	5,083,047
473	5,083,048
480	5,083,049
529	5,083,050
571	5,083,051

CLASS 310

64	5,083,052
90.5	5,083,053
154	5,083,054
248	5,083,055
332	5,083,056

CLASS 312

140.4	5,082,334
292	5,082,336
401	5,082,335

CLASS 313

479	5,083,057
482	5,083,058
631	5,083,059

CLASS 315

3.5	5,083,060
111.81	5,083,061
241 P	5,083,062
294	5,083,063
	5,083,064
307	5,083,065

CLASS 318

41	5,083,066
254	5,083,067
434	5,083,068
558	5,083,069
568.1	5,083,070
569	5,083,071
571	5,083,072
577	5,083,073
625	5,083,074
640	5,083,075

CLASS 320

2	5,083,076

CLASS 322

32	5,083,077

CLASS 323

268	5,083,078
313	5,083,079

CLASS 324

118	5,083,080
126	5,083,081
158 F	5,083,082
158 R	5,083,083
207.19	5,083,084
314	B1 3,999,118
318	5,083,085
533	5,083,086
537	5,083,087
632	5,083,088
	5,083,089
	5,083,090
678	5,083,091
693	5,083,092

CLASS 328

65	5,083,093

CLASS 330

124 R	5,083,094
277	5,083,095
279	5,083,096

CLASS 331

6 5,083,097
99 5,083,098

CLASS 333

21 R 5,083,099
164 5,083,100
181 5,083,101
212 5,083,102

CLASS 335

14 5,083,103
128 5,083,104
216 5,083,105

CLASS 340

432 5,083,108
506 5,083,106
5,083,107
522 5,083,109
541 5,083,110
572 5,083,111
5,083,112
5,083,113
601 5,083,114
624 5,083,115
644 5,083,116
649 5,083,117
706 5,083,118
723 5,083,119
784 5,083,120
799 5,083,121
825.32 5,083,122
825.57 5,083,123
853 5,083,124
906 5,083,125

CLASS 341

156 5,083,126

CLASS 342

1 5,083,127
2 5,083,128
20 5,083,129
188 5,083,130
372 5,083,131

CLASS 343

700 MS 5,083,132
704 5,083,133
713 5,083,134
5,083,135
822 5,083,136

CLASS 346

1.1 5,083,137
5,083,138
76 PH 5,083,139
107 A 5,083,140
108 5,083,141
134 5,083,142
139 R 5,083,143
157 5,083,144
159 5,083,145

CLASS 350

339 F 5,082,354

CLASS 352

160 5,082,357

CLASS 354

149.1 5,083,146
293 5,083,147
400 5,083,148
402 5,083,149
5,083,150

CLASS 355

27 5,083,151
5,083,152
40 5,083,153
68 5,083,154
75 5,083,155
91 5,083,156
200 5,083,157
5,083,158
208 5,083,159
5,083,160
5,083,161
218 5,083,162
219 5,083,163
245 5,083,164
256 5,083,165
260 5,083,166
274 5,083,167
285 5,083,168
296 5,083,169
319 5,083,170

CLASS 356

1 5,082,362
5,082,363
5 5,082,364
28 5,082,365
35.5 5,082,366
73 5,082,367
73.1 5,082,368
243 5,082,369
328 5,082,370
446 5,082,371

CLASS 357

15 5,083,171
23.6 5,083,172
24 5,083,173
27 5,083,174
30 5,083,175
5,083,176
38 5,083,177
5,083,185
40 5,083,178
42 5,083,179
5,083,190
43 5,083,180
45 5,083,181
46 5,083,182
51 5,083,183
5,083,184
68 5,083,191
70 5,083,186
71 5,083,187
5,083,188
72 5,083,189
74 5,083,192
5,083,193
81 5,083,194

CLASS 358

10 5,083,195
12 5,083,196
19 5,083,197
32 5,083,198
88 5,083,199
105 5,083,200
5,083,201
5,083,202
5,083,203
113 5,083,204
140 5,083,205
141 5,083,206
213.19 5,083,207
227 5,083,208
228 5,083,209
298 5,083,210
310 5,083,211
319 5,083,212
326 5,083,213
403 5,083,214
448 5,083,215
451 5,083,216
452 5,083,217
473 5,083,218

CLASS 359

1 5,083,219
15 5,082,337
51 5,082,351
63 5,082,352
5,082,353
234 5,083,220
245 5,083,221
265 5,082,355
328 5,082,340
350 5,083,222
478 5,082,350
642 5,082,358
5,082,359
675 5,082,360
708 5,083,223
876 5,082,361
886 5,082,356

CLASS 360

60 5,083,224
64 5,083,225
77.05 5,083,226
77.13 5,083,227
77.14 5,083,228
78.04 5,083,229
5,083,230
133 5,083,231

CLASS 361

11 5,083,232
117 5,083,233
283 5,083,234
311 5,083,235
401 5,083,236
402 5,083,237
413 5,083,238
424 5,083,239

CLASS 362

26 5,083,240
33 5,083,241
34 5,083,242
61 5,083,243
5,083,244
5,083,245
62 5,083,246
109 5,083,247
147 5,083,248
191 5,083,249
253 5,083,250
255 5,083,251
293 5,083,252
306 5,083,253

CLASS 363

21 5,083,254
132 5,083,255

CLASS 364

148 5,083,256
408 5,083,270
411 5,083,271
412 5,083,272
424.04 5,083,274
424.05 5,083,275
5,083,276
424.1 5,083,273
431.02 5,083,277
431.08 5,083,278
435 5,083,279
474.3 5,083,280
478 5,083,281
487 5,083,282
497 5,083,283
508 5,083,284
550 5,083,288
557 5,083,289
708 5,083,290

CLASS 365

155 5,083,292
189.01 5,083,293
200 5,083,294
205 5,083,295
230.02 5,083,296

CLASS 366

167 5,082,372

CLASS 367

36 5,083,297
96 5,083,298

CLASS 368

113 5,083,299
185 5,083,300

CLASS 369

32 5,083,301
44.11 5,083,302
48 5,083,303

CLASS 372

58 Re.33,803

CLASS 374

155 5,082,373

CLASS 375

98 5,083,304

CLASS 376

184 5,082,617
219 5,082,618
283 5,082,619
373 5,082,620
458 5,082,621

CLASS 378

37 5,083,305
61 5,083,306
200 5,083,307

CLASS 379

381 5,083,308

CLASS 380

4 5,083,309
20 B1 4,336,554

CLASS 381

30 5,083,310
63 5,083,311
68.4 5,083,312

CLASS 382

8 5,083,313

CLASS 384

45 5,082,374
526 5,082,375

CLASS 385

2 5,082,349
3 5,082,376
8 5,082,342
14 5,082,339
5,082,341
34 5,082,343
54 5,082,346
60 5,082,344
5,082,345
5,082,377
72 5,082,378
81 5,082,338
101 5,082,379
111 5,082,348
114 5,082,347
5,082,380

CLASS 395

12 5,083,268
24 5,083,285
115 5,083,286
126 5,083,287
131 5,083,257
275 5,083,266
325 5,083,259
5,083,260
5,083,291
375 5,083,267
425 5,083,263
5,083,269
500 5,083,262
575 5,083,264
725 5,083,258
5,083,261
800 5,083,265

CLASS 400

216 5,082,381
613.2 5,082,382
695 5,082,383
708 5,082,384

CLASS 401

88 5,082,385
206 5,082,386

CLASS 403

146 5,082,387
254 5,082,388
322 5,082,389
326 5,082,390
342 5,082,391

CLASS 404

25 5,082,392
28 5,082,393
68 5,082,394
103 5,082,395
117 5,082,396

CLASS 405

176 5,082,397
258 5,082,398
259.6 5,082,399

CLASS 407

42 5,082,400
114 5,082,401

CLASS 408

1 R 5,082,402
68 5,082,403

CLASS 410

127 5,082,404

CLASS 411

82 5,082,405
105 5,082,406
107 5,082,407
431 5,082,409
455 5,082,410
506 5,082,411
533 5,082,412

CLASS 414

24.5 5,082,413
306 5,082,414
343 5,082,415
492 5,082,416
498 5,082,417
736 5,082,418
786 5,082,419
5,082,420

CLASS 415

118 5,082,421

CLASS 416

5 5,082,422
111 5,082,423
158 5,082,424
188 5,082,425

CLASS 417

198 5,082,426
292 5,082,427
362 5,082,428
477 5,082,429

CLASS 418

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55.5 5,082,432
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11 5,082,433

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469 5,082,667
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CLASS 432

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CLASS 433

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248	5,082,842
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277	5,082,846
312	5,082,847
313	5,082,848
314	5,082,849
317	5,082,850
332	5,082,851
351	5,082,852
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357	5,082,854
383	5,082,855
423	5,082,856
453	5,082,857
456	5,082,858
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486	5,082,860
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109	5,082,883
188	5,082,884
347	5,082,885
403	5,082,886
413	5,082,887
449	5,082,888
451	5,082,889
	5,082,890
481	5,082,891
516	5,082,892
547	5,082,893
730	5,082,894
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823	5,082,896
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340	5,082,903
355	5,082,904
420	5,082,905
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272	5,082,913
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176	5,082,919
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219	5,082,921
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354	5,082,925
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391	5,082,929
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353	5,082,940
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210	5,082,943
294	5,082,944
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480	5,082,972
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454	5,082,977
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	277	323,240
	510	323,241
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D6—	326	323,247
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	373	323,250
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	429	323,252
	440	323,253
	450	323,254
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	470	323,257
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	71	323,277
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	300	323,279
	303	323,280
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	363	323,284
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	385	323,287
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D9—	337	323,289
	351	323,290
	371	323,291
	377	323,292
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	432	323,294
	447	323,295
	456	323,296
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		323,299
	78	323,300
	82	323,301
	93	323,302
	114	323,303
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	12	323,305
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	199	323,332
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		323,337
	241	323,338
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	105	323,360
	142	323,361
	149	323,362
	159	323,363
	161	323,364
	187	323,365
	188	323,366
	191	323,367
	194	323,368
	203	323,369
	237	323,371
	253	323,370
D22—	108	323,372
	134	323,374
	142	323,373
D23—	242	323,375
	244	323,376
	252	323,377
	281	323,378
		323,379
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	313	323,381
	335	323,382
	366	323,383
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	419	323,385
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	130	323,391
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	180	323,396
	181	323,397
	190	323,398
	224	323,399
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D25—	48	323,401
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	51	323,405
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DESIGN PATENTS

01	:	323,402		323,345		323,404		323,235		323,351	323,380
04	:	323,252		323,375		323,415		323,239		323,396	44 : 323,360
		323,300		323,384		323,416		323,255		323,411	47 : 323,246
		323,397	08	: 323,355	18	: 323,312		323,307		323,412	48 : 323,260
06	:	323,242		323,388	19	: 323,391	29	: 323,236	37	: 323,413	323,315
		323,250	09	: 323,277	20	: 323,296		323,262	38	: 323,271	323,318
		323,253		323,287	21	: 323,359	30	: 323,372	39	: 323,245	323,321
		323,257		323,288		323,408	32	: 323,334		323,278	323,358
		323,263		323,295	23	: 323,370		323,363		323,286	323,362
		323,273		323,369	24	: 323,238	33	: 323,294		323,291	323,364
		323,281	10	: 323,290		323,403		323,390		323,302	323,365
		323,284	12	: 323,264	25	: 323,240	34	: 323,249		323,386	323,400
		323,305	13	: 323,267		323,259		323,289		323,406	323,401
		323,306	17	: 323,248		323,270		323,343	40	: 323,269	323,409
		323,308		323,261		323,319		323,367	41	: 323,374	50 : 323,398
		323,309		323,304		323,410		323,395		323,392	55 : 323,268
		323,314		323,322	26	: 323,285	36	: 323,254		323,399	323,293
		323,320		323,353	27	: 323,232		323,297	42	: 323,266	323,381
		323,328		323,356		323,233		323,348		323,379	323,394
		323,333		323,357		323,234					

PLANT PATENTS

25	:	7,769		7,770		7,771	39	: 7,773	41	: 7,772	53 : 7,774

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